NATURAL HISTORY
28 MAR 1951

BELFAST NATURAL HISTORY and PHILOSOPHICAL SOCIETY

128th SESSION

PROCEEDINGS and REPORTS

SESSION
1948-1949

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Volume 3, Part 4

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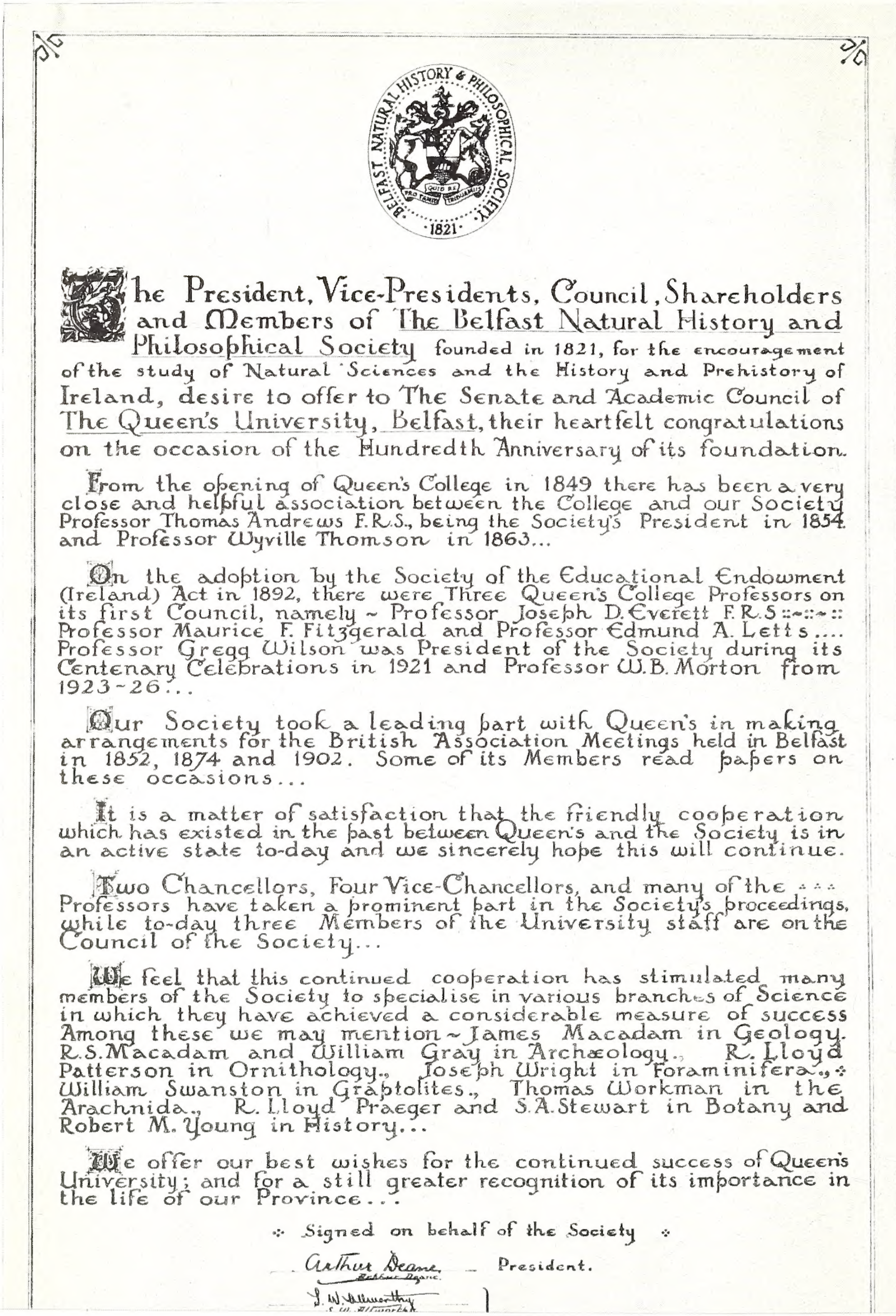

The President, Vice-Presidents, Council, Shareholders and Members of The Belfast Natural History and Philosophical Society founded in 1821, for the encouragement of the study of Natural Sciences and the History and Prehistory of Ireland, desire to offer to The Senate and Academic Council of The Queen's University, Belfast, their heartfelt congratulations on the occasion of the Hundredth Anniversary of its foundation.

From the opening of Queen's College in 1849 there has been a very close and helpful association between the College and our Society Professor Thomas Andrews F.R.S., being the Society's President in 1854 and Professor Wyville Thomson in 1863...

On the adoption by the Society of the Educational Endowment (Ireland) Act in 1892, there were Three Queen's College Professors on its first Council, namely ~ Professor Joseph D. Everett F.R.S. Professor Maurice F. Fitzgerald and Professor Edmund A. Letts.... Professor Gregg Wilson was President of the Society during its Centenary Celebrations in 1921 and Professor W.B. Morton from 1923-26...

Our Society took a leading part with Queen's in making arrangements for the British Association Meetings held in Belfast in 1852, 1874 and 1902. Some of its Members read papers on these occasions...

It is a matter of satisfaction that the friendly cooperation which has existed in the past between Queen's and the Society is in an active state to-day and we sincerely hope this will continue.

Two Chancellors, Four Vice-Chancellors, and many of the Professors have taken a prominent part in the Society's proceedings, while to-day three Members of the University staff are on the Council of the Society...

We feel that this continued cooperation has stimulated many members of the Society to specialise in various branches of Science in which they have achieved a considerable measure of success Among these we may mention ~ James Macadam in Geology. R.S. Macadam and William Gray in Archæology., R. Lloyd Patterson in Ornithology., Joseph Wright in Foraminifera., William Swanston in Graptolites., Thomas Workman in the Arachnida., R. Lloyd Praeger and S.A. Stewart in Botany and Robert M. Young in History...

We offer our best wishes for the continued success of Queen's University; and for a still greater recognition of its importance in the life of our Province...

∴ Signed on behalf of the Society ∴

Arthur Deane — President.
Arthur Deane.

S. W. Allworthy

PROCEEDINGS AND REPORTS

BRITISH MUSEUM NATURAL HISTORY

of the

BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY

Second Series. Vol. 3, Part 4.

128th SESSION, 1948 - 1949.

Belfast:
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1950.

BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY

[ESTABLISHED 1821.]

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The membership of the Society consists of Shareholders, Annual Subscribers and Honorary Members.

Shareholders holding more than two shares are not liable for an annual subscription, but shareholders of two shares pay an annual subscription of five shillings, and holders of one pay ten shillings.

In 1914 a new class of membership was created including persons of either sex, to be elected under the bye-laws of the Society, and admitted by the Council on payment of ten shillings per annum. Such members have all the privileges of the Society, and take part in any business of the Society not affecting the ownership of the property. In 1917 an Archaeological Section was established. Persons wishing to join the Section must be members of the Society and pay an additional minimum subscription of five shillings per annum.

A general meeting of Shareholders and Members is held annually to receive the Report of the Council and the Statement of Accounts for the preceding year ending 31st October, to elect members of Council, to replace those retiring by rotation or for other reasons and to transact any other business incidental to an Annual Meeting.

The Council elect from among their own number the President and other Officers of the Society.

Each member has the right of personal attendance at the ordinary lectures of the Society, and the privilege of introducing friends for admission to such.

Any further information required may be obtained from the Hon. Secretary, 7 College Square North, Belfast.

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Arthur Deane, M.R.I.A., President, in the Chair.

PSYCHOLOGY, PAST AND PRESENT.

Illustrated by Epidiascope.

Rev. R. W. Wilde, M.A., B.Sc., Ph.D.

I.

Psychology is the study of the mind. As an independent science, it is among the newest of all studies. But as a piece of human interest, a species of activity, it must be almost as old as man himself. For to be interested in our fellows, to try to understand their ways of thinking and feeling and acting, is to be

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THE QUEEN'S UNIVERSITY OF BELFAST

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now lay still and unresponsive, deaf alike to the challenge of enemies or the call of family ties. What was the "somewhat" that had departed, to leave the physical organism thus detached and quiescent?

These, then, and possibly other and similar experiences, led our earliest ancestors to suppose that there was, in each of us, an invisible counterpart of the body, inhabiting the body of flesh, but not inexorably tied to it; able, indeed, under certain conditions and at certain times, to achieve its enfranchisement and to walk the earth unhampered by the limitations of the physical self. To this other and non-material "self" men came in time to give the name of mind or soul.

Such were the first dim beginnings of psychology. It grew out of primitive man's speculations concerning experiences in dreams, insanity, and death.

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Looked at in this way, it is clear that we are all of us " psychologising " every hour of our lives; for not an hour passes but we try to construe motives, our own or other people's, try to interpret the grounds of conduct, ask what led someone to act in this way or in that.

Psychology is, then, quite literally, the study of the mind. But just there lies a snag. For no one has ever seen a mind. It cannot be weighed or measured, taken out and inspected. It is not a material entity, that can be captured in a test tube or placed beneath a microscope. Why, then, suppose it to exist? Why did men first conceive the notion of a mind at all?

Here we are reduced to speculation, for certainty of knowledge on the matter there can be none. But it seems reasonable to suppose that the first dim conception of " mind " arose, among our far-back primitive ancestors, as a result of three basic experiences. Sleep, insanity, and dreams, were responsible for suggesting to primitive imaginations the notion of mind or psyche. In sleep, when the physical body lay still and inert, some " part " of a man seemed yet to walk abroad and to mingle with other " selves," to walk abroad indeed with a freedom that was denied it when the body was aroused and active. In insanity another, and alien, " self " seemed to be in possession of what had formerly been a normal man; he was " beside himself," or " not himself." In death a body that a few moments before had been, perhaps, active, quick, vital, and eager, now lay still and unresponsive, deaf alike to the challenge of enemies or the call of family ties. What was the " somewhat " that had departed, to leave the physical organism thus detached and quiescent?

These, then, and possibly other and similar experiences, led our earliest ancestors to suppose that there was, in each of us, an invisible counterpart of the body, inhabiting the body of flesh, but not inexorably tied to it; able, indeed, under certain conditions and at certain times, to achieve its enfranchisement and to walk the earth unhampered by the limitations of the physical self. To this other and non-material " self " men came in time to give the name of mind or soul.

Such were the first dim beginnings of psychology. It grew out of primitive man's speculations concerning experiences in dreams, insanity, and death.

II.

With the great philosophers of Ancient Greece, in the fourth century B.C., psychology became a definite part of philosophical inquiry, and thinkers like Plato and Aristotle asked many of the questions that our present-day psychologists still are asking, and in not a few cases they made shrewd guesses that came very near the truth by way of answer. Here, as in so much else, they laid (all unwittingly) the foundations of later research and experiment.

Plato conceived of the mind or soul as a non-material entity inhabiting the body, but not created with it. The soul, he taught, had dwelt in another sphere before coming to earth to inhabit a body of flesh. This world of earlier spiritual existence was an " ideal " world, and the things of this present world were but the faint shadows or imitations of the perfect things existing in that world of ideal proportions. Some dim traces of memory remained in each of us concerning that earlier and pre-earthly existence, and our reachings-out after goodness and beauty and truth were prompted and inspired by these memories. We were, that is to say, as haunted men—haunted by vague and disturbing memories of a beauty and a perfection that here were strangers to us.

Wordsworth, our English poet, was, two thousand years later, to take up this Platonic conception and weave it into his poem " Intimations of Immortality ":

" Not in entire forgetfulness,
And not in utter nakedness,
But, trailing clouds of glory, do we come
From God, who is our home."

Plato taught that, just as the soul was pre-existent, so it was immortal, and would continue to live on after the body had perished.

It is not easy to summarise in a few words Aristotle's conception of the mind or soul. To begin with, he used a Greek word whose precise shade of meaning can hardly be conveyed in a translation into English; and in the second place his notion was a subtle philosophical one not easily understood by those without training in philosophy.

The mind or soul, as Aristotle thought of it, was not so much a " thing " that existed, as a principle—if you like, a vital principle, a potentiality of life, an élan vital, a moving, guiding force. Material things took shape and meaning and purpose as mind entered into them. Mind was that which moulded, guided, fashioned. It was mind that " in-formed " substance.

Although Aristotle's conception of the mind is not easy to grasp, he none the less laid enduring foundations for what, in this much later age, has become the science of psychology. He was, too, the first experimentalist (so far as we know) in the realm of psychology, and discovered a number of useful facts about the qualities and functions of the mind.

III.

During the " Dark Ages " the learning of Ancient Greece and Rome was swept into oblivion, and Europe was submerged by alien and uncivilised peoples. What of learning remained was locked up in monasteries and monastic schools, and men's minds were busy about other things than their own hidden, internal processes. Theology, the one subject of study, was widely-cast however, and necessarily embraced, to some extent, psychology. But it made little fresh contribution to psychological discovery, and was content to take over at first Plato's, and later Aristotle's, generalisations and use them for its own.

It was not, indeed, until the " Revival of Learning," in the fifteenth century, that students turned again to inquire specifically about the mind as a subject of interest in and for its own sake. A beginning was made by the philosopher Descartes, a Frenchman, born in 1596. Descartes sought to build up a system of philosophy that should—to put it vulgarly—start from scratch, without preconceptions, and with nothing taken for granted. He cast about, therefore, for some unquestionable truth to provide a starting-point. This he discovered in the fact of his own existence. The usual translation of his famous phrase hardly brings out the real significance of his meaning. *Cogito, ergo sum.* " I am (at this moment) thinking; therefore I myself must exist." More usually, " I think, therefore I am." His own existence he could not question, even though doubt were stretched to the utmost limit. Thus Descartes laid the basis of his philosophical system in mind. A mental fact was the original truth. Knowledge of one's own identity and existence was made the starting point of a whole vast system of thought.

From Descartes onwards a number of brilliant English thinkers, also seeking to build philosophical systems, made important contributions to the study of mind. Outstanding names are those of Locke, Hume, and Berkeley.

Practically the last word on mind from the side of philosophy was written down by Emanuel Kant, the great German scholar, born 1724. His ideas of the essential structure of the human mind are still widely accepted. Though in detail they have been questioned by some, they are scarcely likely to be refuted in their general tenor or their broad basic conceptions.

One thing, it seems to me, Kant has established: that the mind or " self " is not a passive, merely receptive thing. It is not, that is to say, like a sponge, simply soaking up what is dripped into it, nor like a slate (Locke's suggestion), merely recording what is written upon it by sensation from without. On the contrary, mind is an active, dynamic, organising thing. Experience is not just what comes to us by way of external stimulus or sensation; it is a compound—external stimulus or happening, *plus* the mouding, organising, qualifying activity of mind. Experience, that is to say, does not lie in the world external to us; it is something that is made and actively instituted from within.

IV.

Throughout this two thousand years of thought and inquiry, psychology had remained a branch of philosophy. Its method of investigation had been almost wholly that of looking within one's own individual mind, discovering there what one could, and then proceeding to set down general principles as to the nature and operations of mind as such.

So things continued throughout the nineteenth century, until, in the last quarter of that century, one or two thinkers conceived, each, the idea that psychology could not hope to make much farther progress until it cut adrift from philosophy, and took up an independent status as a pure science, using the scientific methods of observation and experiment and exact measurement that obtained in other fields of scientific research. It is from this time that the birth of modern psychology is to be dated. In 1879 Wundt opened the first psychological laboratory specifically devised as such, at Leipzig, where, four years previously, he had taken up the chair of philosophy. Four years later G. Stanley Hall (a former pupil of Wundt's) founded the first American psychological laboratory at the recently created John Hopkins University, to be followed in 1888 by James McKeen Cattell (also a former student at Leipzig), who opened a similar laboratory at the University of Pennsylvania. In Germany and in America psychology as an independent and experimental science was now "on the way." Meantime, in France, attention was mainly concentrated on aberrations or diseases of the mind, and two brilliant schools of medical psychology (though the term was not then in use) were conducting original investigations at Paris, with Charcot for its head, and at Nancy, where Bernheim and Liébault were leaders. Whilst, away in Vienna, and a few years afterwards, a gifted young Jewish neurologist was conducting researches that were to lead later to some of the most challenging and fruitful conceptions of modern psychology. In the mind of Sigmund Freud there were already incubating the notion of the Unconscious psyche and dim speculations that were afterwards to mature into the full-blown doctrines of Psycho-Analysis. The new and infant science of experimental psychology was already a lusty and thriving youngster. Psychology as an independent science was not only born, but was assured of survival.

This "new psychology" as it is sometimes called (although the term is by other writers restricted to the psycho-analytical doctrines) was, on the theoretical side, a more modest discipline than its parent, philosophy. For the most part it was content to take mind as "given," just as the physicist takes energy as given, being concerned not so much to discuss its inherent nature and essence as to use it, describe its operations and activities, and to measure its dynamics and velocities. Many philosophers, on the other hand, still speculate, in the course of their philosophy, upon the nature of mind. But their psychology is—where it is not admittedly borrowed from the scientific psychologists—that of the old introspective type, i.e. a setting down of what may be discovered by looking within one's own mind and scrutinising its operations.

V.

From the time of its inception as an independent science psychology has made rapid strides. Several universities in the British Isles, and many in America and on the Continent, have their psychology departments, equipped with laboratories and apparatus. On the whole, we lag somewhat behind in these islands; we have only a few universities that can as yet bestow degrees in psychology (none at all in Ireland). But it is safe to predict that psychology, both as an academic study, and as a matter of general human interest, has come to stay. It has already penetrated deeply into our art, our literature, our drama; it is influencing both law and medicine; and it is increasingly invading nearly all forms of human activity.

As studied by the specialist and the psychological student to-day it is a prodigious subject. It is estimated that about 3,000 learned books in various languages are published every year on the subject, to say nothing of the vast number of small and popular volumes that issue from the press of all civilised countries. Many professions, including law, medicine, and education, include a short course on psychology as part of the normal training for their candidates. It is being widely urged that all ministers of religion, and all civil administrators going to foreign posts, should be similarly educated in the subject.

Actually, to-day, the science is so vast that most professional psychologists concentrate, for the most part, individually, on one or two fields of research, leaving others to select their own preferential field. The general pooling of this departmentalised knowledge takes place by means of various conferences and through the medium of the various psychological journals.

This departmentalised and specialised study is pursued under a number of more or less distinct and separate heads of research. These may be summarised:—

1. General Adult Psychology.
2. Child Psychology.
3. Abnormal Psychology.
4. Comparative (or Animal) Psychology.
5. Individual Psychology.
6. Social Psychology.
7. Para-Psychology.

Most of these titles are self-explanatory. No. 5 indicates that branch of psychology that investigates how people differ, mentally, from each other; it measures things like intelligence, memory, nervous response, etc., in individuals, and finds averages or " norms " for each particular aptitude. No. 7, on which little work has been done as yet, investigates the mental aspects of such occurrences as telepathy, second-sight, visions, somnambulisms, trances, and hypnotism (although the last-named is studied also as a branch of Abnormal Psychology). Each of these sections has its own vast literature.

In addition, there are a number of practical applications of psychology, " applied psychology " as it is called. These too fall under different heads:—

1. Educational Psychology.
2. Industrial Psychology.
3. Vocational Psychology.
4. Criminal Psychology.
5. Legal Psychology.
6. Child Training.
7. Medical Psychology.
8. Mental Hygiene.

Yet not all the above exhaust the possibilities! For there are several isolated subjects that have themselves been the substance of large psychological investigation and inquiry. Of these highly-specialised studies the following may be named:—

1. The Psychology of Religion.
2. The Psychology of Aesthetics.
3. Memory.
4. Learning.
5. Intelligence.

It is not difficult to see how even the expert must be content with authoritative knowledge in only one or two fields of his science, and then for the rest do his best to keep up in a broad way with what is being done by fellow-workers in other aspects of the subject.

VI.

It is only right that I should indicate also that there are a number of different " schools " in psychology, whose tenets and predilections are by no means mutually compatible or harmonious. Just how many schools exist within the science is a matter of debate. Professor R. S. Woodworth, a veteran American worker, writing in 1931, spoke of five distinct and separate schools; now, in 1949, in the eighth edition of his book, he finds some seven or eight. Dr. William Brown in 1924 avowed that " there exist no less than nine distinctive and antagonistic schools." Whilst the late Professor Wm. McDougall (one of the most able and influential of all British psychologists) wrote in 1934, " There is still no one science of psychology, but rather the psychologies of many schools."

All this adds to the difficulty and complexity of the subject for the layman, and does not make for ease of approach even by the expert.

Yet it would be possible to exaggerate both the importance and the significance of these conflicting schools in psychology. Much in them is an heritage from the past, and comes of philosophical, rather than strictly psychological, differentiation. There is, actually, a very wide agreement among psychologists as to methods of investigation, and little less agreement upon the broad basic facts or processes of mental life. Where disunity breaks in is when psychologists go on, from scrutiny of mental processes, to discuss their fundamental nature and the precise significance of " mind."

An illustration or two will make this clear. Freud was a determinist; he had no belief in the reality of human freedom. But this " psychic determinism " is hardly a psychological doctrine; it is a philosophical one. And, in the issue, there are many psychologists who can accept nearly the whole body of phychoanalytic doctrines, but who part company with Freud on the matter of the freedom of the will. More radical is the severance between the Behaviourists (a predominantly American school) and most other schools of psychology. For, to the Behaviourist, mind is a fiction. Even consciousness, thought, purpose, are meaningless terms. The only reality about the human organism is a physical one—muscles, brain, and nerves. But here again it is clear (at least to those with any philosophical training) that we are dealing with a philosophical contention rather than a psychological one. All psychologists respect the fine and painstaking experimental work that has been done by the Behaviourists (not least in the realm of child psychology); many can accept, almost without question, the great body of their experimental findings; but what I think is now a substantial majority of psychologists can not write off so airily as do the Behaviourists such things as thought, purpose, will, nor can they ascribe to the Behaviourists' contention that man is nothing more than a complex mechanism, compounded of muscle, brain, and nerve.

I have dwelt for a few moments on this matter of the psychological schools, partly because these very real differences do exist within the science, and partly because it would be misleading, even in a very general lecture on modern psychology, to ignore them. It may be unfortunate, but the casual reader of psychological books will be bound to come across well-marked differences, not only in presentation, but even in conclusions and fundamental deductions. Some of the trouble comes of the fact that psychology is a very new science, having nothing of the certitude and the unanimity of, say, chemistry or mechanics; and some of it is due to the fact that psychology was cradled and reared in philosophy, and has not yet wholly cast off the swaddling-bands of its infancy. The general reader will not go far astray if he can remember that there is a very real distinction between psychology, which is a science, and philosophy, which is, quite literally, meta-physics. Most of the divergencies between psychological viewpoints are philosophical, rather than psychological, although psychologists (being human, like other folk) do not always clearly see and acknowledge this.

VII.

If I were asked what branches and aspects of modern psychology had impinged most forcefully and influentially upon our common life and aroused most of human interest, I should certainly include among these such studies as medical psychology, child psychology, intelligence, industrial and vocational psychology, and para-psychology. I should like to devote the remainder of my time to a few remarks about each of these.

First, then, medical psychology. During the last sixty years the close inter-relationship between mind and body, and the power of each to influence the other for health or for sickness, has been increasingly recognised. It is now an accepted fact that a very large proportion of all the ills that flesh is heir to (many would say more than half) is really due essentially to psychological factors, the influence of the mind upon the body. We have come to see how profound is the effect of mental states, elation, fear, tension, rage, upon physical and nervous processes.

This influence of mind upon body is exerted mainly by way of the sympathetic nervous system on the one hand, and of the endocrine glands on the other. Thirty years ago glandular interpretations were the rage, and the enthusiasts outran both knowledge and discretion. That fashion has passed. We no longer imagine we can wholly explain a human personality in terms of its endocrine glands. But greatly important is the economy of the ductless glands in the human body. And sensitively responsive are those same glands to mental states and conditions. A man can, quite literally, alter the functioning of his thyroid gland or his adrenal glands by the quality of his thoughts. The story is by no means complete as yet (perhaps no scientific viewpoint ever reaches finality); but understanding is growing, and on this side of things medicine is armed with new weapons in its unceasing warfare against disease.

From another angle there is the whole body of psycho-analytic doctrines (themselves nowadays propounded through three major and more or less mutually antagonistic schools!). Whether, with Freud, we think of the fundamental human impulse as love (a better word than " sex " to denote what Freud is really at), or, with Alder, construe it as power, or yet again, with Jung, think of it simply *as* life, the upward surge of being, élan vital, the life force, it is clear that much of our most important mental activity takes place below the surface of conscious awareness, is, in the term now current, unconscious. And the prodigious power of unconscious mentality to influence both health and happiness has, in these latter days, been amply demonstrated.

Quite recently there has been an interesting invasion of sheerly physical methods into treatment of the mentally deranged—another aspect of psychological medicine. Hypnotism has been for long employed in the treatment of certain types of disorder (not, however, of actual insanity, where it is useless). More recently there has come electric shock therapy (the shooting of a moderate electric current through the forepart of the brain) for the treatment of depressive cases—a form of therapy that has shown highly encouraging results, and has immensely shortened the duration of this class of disorder. For disorders of a different type there have been evolved, on the one hand, " continuous sleep " treatment, a condition produced usually by insulin; and, on the other hand, what is known as prefrontal leucotomy, the actual removal (or rather destruction) of small areas of the frontal lobes of the brain. Success in these two latter procedures is less constant and less marked than with electric shock therapy, but notwithstanding there have been encouraging results in a large number of cases that effectively defied all earlier forms of therapy. These physical methods of treating mental disorder are, indirectly, testimony to the close association between mind and body, mental condition and physical brain.

Psychological medicine is comparatively new. Already it offers hope of a larger health and happiness for the race.

VIII.

Child psychology has made enormous strides during the last sixty years. The impetus to it came in the first place from great educationalists, like Pestalozzi (d. 1827) and Froebel (d. 1852), and even earlier from the queer and perverted, but genuine, genius of Rousseau (d. 1778). But it was not until experimental physiology, on the one hand, and the science of evolution, on the other, made their appearance that child psychology really came into its own. Great names among the earlier child psychologists are those of W. Preyer, G. Stanley Hall (best known, though, for his masterly study on Adolescence), James Sully, and Alfred Binet, representing Germany, America, England, and France respectively. Since their time special studies of childhood have gone ahead. Towards the close of the nineteenth century much thought was given to the maladjustments of childhood, and the Philadelphia "Psychological Clinic" (the forerunner of child guidance clinics everywhere) was begun.

During the past thirty years work in this field of child psychology has tended to become more and more specialised. The earlier method of generalising about the growth and development of the child has given place to the specific study of particular aptitudes or qualities, and different workers have spent many years, and exercised much ingenuity both in method and in apparatus, in investigating such things as the acquirement of language habits, the growth of socialised attitudes, emotional impulses, and the like.

In speaking of the Behaviourist School in America I hinted at the fine quality of their experimental work. This was never better exemplified than in their studies of children, in particular their studies of infants. Professor J. B. Watson, founder and head of the "school," after much painstaking work gave it as his opinion that the child came into life having only two fears: dread of a sudden loss of support, and dread of a sudden, loud, and near-by noise. All other fears, Watson held, were acquired. To Watson and his collaborators we owe also some striking work on "conditioning." They established how comparatively easy it is to change, mould, or condition a child's likes and dislikes, proclivities and fears, by associating various objects or situations with different types of emotional experience. Watson's teachings under these heads have been widely accepted, even by those who cannot subscribe to Behaviourism as a creed.

Several significant truths have emerged from this half century of study in the psychology of childhood. It has been revealed how potent and formative are the early years of infancy in shaping and mouding the child's later development; how that the earliest influences that play around us both cut deepest and last longest, so that, quite literally, "the child is father of the man." Again, it is clear that the child's two basic needs are those of nourishment and love; and the second is no whit less urgent and crucial than the first. The child simply cannot develop healthily and normally if he is denied an emotionally stable environment and an assurance of being loved and wanted. No other single causative factor in juvenile delinquency, for instance, ranks so constant as this of a broken love relationship, an insecurity in affection. Whilst yet again we have come to understand that the child is not just "a little man," a diminished duplicate of the adult. On the contrary, he has his own specific ways of thinking, his own specially adaptive language, and his own peculiar outlook on the world and its natural processes. He is, in other words, a unique type of personality, not to be comprehended by being regarded simply as the man "writ small."

In the light of principles such as these our ideas on matters like education, home life, childish misdemeanours, and on childhood growth and development altogether, are being considerably modified, and it is safe to predict that our handling of young life, both individually and socially, will be increasingly influenced by the continued findings of this branch of psychological study.

IX.

Interest in the nature and measurement of intelligence goes back as far as the opening years of the last century. It arose among a group of French psychiatrists, whose hope it was that a larger understanding of this faculty of intelligence might enable them the more successfully to cope with the treatment of the insane. This hope has not been fulfilled. We know now that intelligence is a more or less fixed quantity in each human individual, and can only in very small measure be improved or intrinsically increased.

The matter of intelligence was, however, again to the fore, and once more in France, around the turn of the present century, when the Paris education authorities commissioned Alfred Binet, a French psychologist, to advise them on the problem of school dullards and to say why it was that certain children seemed never to profit by the school curriculum. Binet, an established psychologist, had already been intrigued by the problem of intelligence, had carried out numerous playful " experiments " with his two growing daughters, and had published in 1903 a remarkable and pioneer book entitled " L'Étude Expérimentale de l'Intelligence." Now, urged forward by the request of the education authorities, Binet pushed on with the task of producing reliable tests whereby intelligence, at different age levels, might be studied and measured. Working in collaboration with T. Simon, Binet produced in 1905 his first " intelligence test " or rather, series of tests. These were revised in 1908, and were now arranged in age levels, covering an age span of three to twelve years, and a further revision appeared in 1911, the year before Binet's death. This series of tests, commonly referred to as the Binet-Simon Tests, of 1911, has formed the basis and stimulus for all subsequent tests, by whomsoever devised.

The First World War brought further modifications. The United States, which had some two million men under arms, felt the need for basing promotion upon something other than chance or haphazard factors, or the whim of a commanding officer, and American psychologists were commissioned to produce " group " tests of intelligence, that could be given to a large number of individuals at one and the same time, that required a comparatively limited time for their working through, and that could be marked with comparative ease and simplicity. The result was the famous Army Alpha and Army Beta Tests, which were administered to well over a million American soldiers. Since that time a number of group tests have appeared in various countries, although only a few have established themselves as real favourites among psychological workers. The Binet-Simon Tests had been individual, and had depended for their administration upon the personal and verbal contact of psychologist and subject. The new group tests were necessarily pencil and paper ones, though " writing " consisted of nothing more than underlining or crossing out a word or other sign.

The method generally in use to-day is to administer tests in group form, and only to resort to individual (which are invariably verbal) tests when there is reason to doubt, in any one case, the reliability of the group test results. As is well known, tests of this kind have been widely used in our own Services during the Second War period and since, although these Service Tests are designed to measure other aptitudes in addition to intelligence.

What *is* intelligence? Curiously, psychologists are very chary of essaying a definition. Professor E. L. Thorndike (a distinguished American psychologist) speaks laconically for most of them when he says: " Intelligence is the thing that psychologists test when they test intelligence." The situation is not unlike that concerning the definition of " mind " (to which I referred at the beginning of this lecture). As the physicist regards energy as a given factor, so the psychologist tends to take intelligence as given, and to be content (as yet) to go on with the task of judging and measuring it.

I must, however, refer to a famous controversy among psychologists on this matter of intelligence. This centres around the question whether intelligence is comparatively unitary or multiplex. The late Professor C. E. Spearman of London University (an outstandingly brilliant investigator) held that in all tasks requiring the application of intelligence there is always present a quantity of what he called " general intelligence " (commonly designated " G "), whilst, along with this in any particular task, there goes also another measure or quality that is *specific* to the task in hand (usually referred to as " s "). Thus arithmetical reasoning requires, on the one hand, the G factor, and, on the other hand, a mathematical or calculative factor, s. Literary ability is compounded of G, and of a verbal discrimination factor, another and different s. This theory of Spearman's is known as the Two-Factor Theory of Intelligence. On the other hand, a number of other investigators, like Professor Godfrey H. Thomson of Edinburgh, and Professor E. L. Thorndike of America, contend that there is no such thing as a G factor, but that every type of intellectual operation is itself an s. The evidence is highly technical, depending in part upon elaborate statistical methods, and is necessarily a matter for the experts.

Of more interest to the general inquirer is the contention voiced by psychologists like Sir Cyril Burt and Professor Raymond B. Cattell, that in these islands the level of intelligence is generally and consistently declining. The contention is based upon such considerations as the following: (1) Over the whole range of the community intelligence level tends to coincide broadly with occupational level (there are of course many and wide individual differences); that is, the average intelligence of the professional classes is higher than is that of the manual artisan classes, and this again is higher than that of the casual labourer classes. (2) Families among the professional and " higher " occupational groups tend to be very small, whilst those among the " lowest " occupational groups tend to be very large; so that the intelligentsia grow smaller in numbers, whilst the comparatively low-intelligenced steadily increase in proportion to the whole population. (3) A further consideration is that the first child in any family tends to be more highly intelligenced than subsequent children; a factor which increases the trend indicated in (2).

Here again the evidence is highly technical and complex, and there are a number of both psychological and mathematical authorities who by no means accept the statistically-based arguments of Sir Cyril Burt and Dr. Cattell. Yet, even in a general lecture on psychology, it is impossible to pass over the matter in silence, since conclusions both sweeping and disturbing have been drawn from the apparent evidence, and prognostications of a national deterioration and widespread mental decline have been forthrightly put forward by these investigators. Some substance there almost certainly is in these pessimistic contentions, yet—technicalities apart—there must be a snag somewhere, since, considering the fact that the intelligentsia have always been a minority of the population, on Burt's and Cattell's showing we ought long since (assuming the trend implied) to have become a race of morons! An elementary statistical approach, resulting in a view antagonistic to that of Burt and Cattell, may be seen in Mr. J. L. Gray's " The Nation's Intelligence," which has been, I suspect, among the books that have influenced recent educational policy by the Imperial Government.

More encouraging (at least to the undistinguished!) is the assertion of Cattell himself (!) that mathematical-psychological investigation suggests that " since abilities are so numerous, every single individual must, by sheer mathematical probability, lead the rest of the world in one of them. Every one, therefore, can consider himself an actual or potential genius at some one thing."

Intelligence is an intriguing and fascinating study. My own feeling is that, whilst with the child we can now measure, and even in early years predict, with a very fair degree of accuracy the " intelligence quotient," we are on ground far less safe and assured when it comes to the full-grown adult. It is commonly asserted among psychologists that over the vast majority of the population intelligence reaches its peak at the age of 13, and that only a small number of " superior " individuals go on to develop to sixteen, eighteen, or possibly even nineteen years of mental age. Intelligence continues to develop in breadth (information acquired and facts imbibed), but its actual height or intensity is reached fairly early in life. So the assertion runs. Here again we are in the realm of mathematical psychology, and only those trained in this field can venture an opinion. But it is, I think, at least possible that some of the dubiety comes of the imperfection of our measurements, or rather of our tools for measuring, and I suspect that fairly large changes in psychological theory may yet be made on this subject of intelligence.

Meanwhile we have in our hands (in the way of intelligence tests) very useful instruments for measuring the intellectual aptitudes of at least the younger members of the community, and of thus (given wisdom in social planning and educational opportunity) fitting round pegs into round holes.

X.

This matter of fitting round pegs into round holes leads on naturally to a consideration of vocational and industrial psychology. Time is passing rapidly and I must content myself with only the briefest word on these.

Industrial psychology has established beyond all question that success and efficiency in industry rest back as much on psychological and " human " factors as upon things like machinery, processes, and cost accounting. The general " atmosphere " of a room, the bearing of the foreman, the attitudes of nearby workmates, the presence or absence of esprit de corps, and the whole tenor and quality of the undertaking as a whole, proceeding from the board and general manager down, vitally affect both output and quality of work done. Moreover the value of such things as fairly frequent rest periods, adequate lighting, and scientifically-devised ventilation, are all factors of consequence. These and other things fall within the province of industrial psychology. It is a new branch of applied psychology. In the early days it had to meet the suspicions of industrialists. Later it encountered the distrust of the workers, who saw in it only an instrument for grinding more of effort out of them. But slowly these misconceptions are vanishing and giving way to a more enlightened and more rational viewpoint. Industrial psychology, I suspect, has come to stay.

Vocational psychology has, as its central aim, the counselling of round pegs to find round holes. Intelligence is only one factor in industrial or business success and efficiency. Both special aptitudes (other than intelligence) and emotional and characterological factors enter in. All of these are susceptible of measurement, however, and vocational psychologists have in their hands these days "batteries" of tests which can be administered to a candidate in the course of an hour or two. Thereafter the person concerned is advised: "If you take up this or that calling, there is every chance that you would be reasonably successful and reasonably happy at your work; but if you were to go into this or that, you would in all probability be neither." The Institute of Industrial Psychology has kept a careful after-check-up of its cases, and it has been found that with well over eighty per cent. of those who followed the advice given the desirable results forecast have been achieved; on the other hand there is a large percentage of failures where advice has been flouted or ignored. Vocational psychology, still in its infancy, will undoubtedly play an increasingly large and important part in years to come.

XI.

Now I must draw an already over-lengthy lecture to a close. I cannot, however, leave my subject without at least a glance at the newest of all the various branches of psychological research—para-psychology.

This has been strangely ignored, and indeed despised, by many authoritative psychologists. Psychologists (as I remarked earlier) are human, and are, for all their psychology, not wholly immune from the foibles and even the prejudices that afflict the non-psychological. So that many a worker whose keenness is as that of a hound upon the scent, in other fields of the science, will dismiss as "spooky," and with a shrug of the shoulders, any reference to para-psychology. But here and there is one who takes his courage in both hands and dares to investigate this strange hinterland that impinges upon the abnormal, on the one hand, and the occult on the other. One such is Professor J. B. Rhine, of Duke University, U.S.A.

Rhine has set himself deliberately to investigate whatever powers of mind there may exist outside those ordinarily dealt with in intelligence, special aptitude, emotive, and characterological tests. His work is noteworthy not only for its results, but for the experimental methods and material he has devised. He is a really original worker, a pioneer in untrodden fields.

For some years Rhine was chiefly concerned with what is known technically as "extra-sensory perception," that is, the power of the mind to apprehend a fact or object that is not presented in the ordinary way through the senses. Much of the investigation was carried out by means of cards specially devised by Rhine. As time went on, and in view of various criticisms of his results, Rhine tightened up his experimental procedures, and took precautions and safeguards whose elaborateness has not been equalled in any line of scientific research. Indeed, his care to guard against error or misinterpretation of results has sometimes gone almost to the length of the bizarre. Further, he has throughout worked in the closest collaboration with authoritative mathematicians, and his results (necessarily a matter of elaborate statistics) have been scrutinised by them to the last detail.

What has Rhine accomplished? He has, I think, established beyond all cavil (for those who are willing to consult the evidence) that what is commonly called "telepathy" is an actual fact. It is possible for one human mind to apprehend the contents of another mind without intervention of sensory processes, and even where the two persons concerned are separated by a considerable distance. (Professor William McDougall, among others, was incidentally, present at some of Rhine's experiments, and was greatly interested in the work throughout. McDougall, like Dr. R. H. Thouless of Cambridge, was courageous enough to defy the frowns of fellow-psychologists, and to invade a territory that is commonly regarded as outside the notice of respectable scientists. It is only fair, however, to state that a research fellowship was set up, in 1940, at Trinity College, Cambridge, to finance work in para-psychology.)

Some of Rhine's results, when subjected to a mathematical analysis, give odds of many millions (some even billions) to one against mere chance or coincidence. One remarkable case, a young girl examined by Professor B. F. Riess, actually scored an average of more than 18 hits per 25 through a series of 74 runs, and on one occasion actually achieved a perfect score of 25 out of 25 possibilities, notwithstanding that experimenter and subject were in entirely separate buildings.

But Rhine's work is by no means confined to telepathy. He has investigated also what is known as pre-cognitive perception—the ability to foresee an event before ever it comes to pass (in most of Rhine's cases, to forecast a card that would be turned up *before* the card was turned or had been seen by anyone). This strange mental faculty was discovered, in the first place, by sheer accident, whilst experiments on thought-transference were taking place. Since then many thousands of experiments have taken place around it.

More recently Rhine and his band of workers have devoted themselves to an investigation of what is known as " psycho-kinesis "—the ability of the mind to move, or at least in some measure to control the movements of, objects in space. Investigations into PK phenomena, as they are called, did not begin at Duke University until 1934, and the results are still tentative. But, says Dr. Rhine, " The cumulative effect has been most impressive and convincing to those of us who have watched the evidence grow from nothing to dimensions too extensive and involved to be followed without a fair amount of scientific preparation." But, he writes later, " The mind *has* a force that can act on matter " (italics mine). " There must, therefore, be an energy convertible to physical action, a mental energy."

It would take us too far to discuss this intriguing subject in all its bearings, physical, psychological, philosophical. It is clear, as Dr. Rhine himself recognises, that some of his experimental results seem to make hay of the known laws of physics. But that is no reason for shutting one's eyes to them. It is rather a call to think afresh. It may be that here, as in some other fields of human experience, " there are more things than are dreamt of in our philosophy." If para-psychology leads to a new and intensified investigation of some of these, it will have results that far out-spread the purely psychological field. But there I must leave it.

Psychology, one of the newest of the sciences, has of a certainty come to stay. It will increasingly make for larger self-understanding; can assist in the evolution of a nobler and wiser race; and can help us to master ourselves with something approaching the success with which we have mastered our material world. Like every science, it should be servant, and not master. It can give us no final direction about ends and values, goals worthy of being pursued, ideals fit for our cherishing. But, these decided, it can provide us with powerful aids to their attainment. It can help open the doorways to wider life and richer experience.

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24th March, 1949.

Lt.-Col. The Right Hon. S. H. Hall-Thompson, D.L., M.P.,
Minister of Education, in the Chair.

PRESIDENTIAL ADDRESS.

THE USES OF MUSEUMS AND ART GALLERIES.

With some reference to early Museum efforts in Northern Ireland.

Arthur Deane.

[Abstract.]

To-night I propose to use the word Museum in its broadest sense to include subjects of Science, Art and History as in America and on the Continent. In the British Isles we are in the habit of naming them separately when housed in the same building. It is of course possible to have a Museum of Natural History and a Museum of Art, but I think there is a good deal to be said in favour, when both are housed under one roof.

Though the idea of public museums in these islands is almost three hundred years old, private collectors have abounded from the beginning of time. The urge to collect, to preserve, to record, even merely to hoard, is a very deep-seated one in human nature. Even in that misty past, which we speak of as pre-historic, there is evidence of such traits and in later cultures there is much to record of the collecting instinct.

For many generations the very word Museum was synonymous in the minds of many uncaring people with mere curiosities, and miscellaneous junk. Nothing could be further from the truth in any self-respecting Museum, though such an idea may have grown from the fact that someone had collected without purpose, and the material exhibited without arrangement or design, a thing that may have happened in small private museums in the past.

The aims of the earliest promoters of Museums in this country, as elsewhere, ran constantly on the lines of conservation and education. The ideals of all Museum management on these two aspects of its organisation, that is of conserving and educating, is very high, but there is a very narrow margin between the two.

Every single exhibited object in any Museum worthy of the name, from a spinning wheel to biological specimens, from old china and lace to objects showing geological strata, must have constant supervision and necessary care.

There are very few objects that cannot be used, in one scheme or another, for educational or research purposes. Indeed every large Museum should divide its collections into two parts—an exhibited series and a reserve collection for study and research.

Northern Ireland men have done their share in contributing to the making and supporting of Museums worthy of educational and material progress. There have been men born in Northern Ireland who were far-sighted enough to make, at great cost to themselves, collections, which are to-day world renowned.

Sir Hans Sloane, born and bred in Killyleagh, Co. Down, in 1660, who settled in London in 1684, as a practising physician, was made a Fellow of the Royal

Society the next year, and in 1727 Sir Hans followed Sir Isaac Newton as President.

In the early years of the 18th century, the doctor travelled about the world a good deal, and settled for a time in the West Indies, as physician to the Governor there, and no one would doubt that during these years of journeying but that he was observing, learning and collecting assiduously.

Sir Hans Sloane, on his return to England, was made a baronet by George the First, and when he died in 1753 he was Court Physician to George the Second. In his will, Sloane offered his vast collections to the nation for £20,000, though it was said that he had spent more than £50,000 on them. A more imposing sum then than now.

Frankly the doctor had little to leave his family, for all his money had gone in his passion for gathering throughout his life. It is this valuable Sloane collection which was the beginning of that great institution, famed the world over as the British Museum.

The Parliament of that day doubtless thought of their action in complying with the Sloane bequest as being one quite without precedent, but having the offer, the next question was how to purchase and house the collections fittingly. Accordingly, in the fashion of the time, a State Lottery was authorised by Parliament, which brought in not only sufficient money to purchase the collections and Montague House in Bloomsbury, but left some to augment the collections. London's Sloane Street perpetuates Sir Hans Sloane's name.

The British Museum was formally opened in January, 1757, and from the first was regarded as a cultural preserve: for many years admittance was by ticket only and, even so, its doors were open only for three days in the week. Not until 1810 was the general public freely admitted. The building we know to-day as the British Museum was built in 1854 when the collections had outgrown the original premises of 1757; and there have been many additions to the building since then, for a living Museum is always growing.

Another Ulsterman, Sir William Brown, born near Ballymena in 1784, became a successful business man and gave large collections to Liverpool, and an imposing Museum was built. The building itself, conforming to Victorian standards, was not in the best of taste but its contents were very fine. Little could Sir William Brown have foreseen its almost total destruction by Nazi bombs in the recent war. His name will be remembered by William Brown Street, Liverpool.

Sir Richard Wallace was a 19th century connoisseur of art, belonging to a family having close links with N. Ireland. He was born in London, schooled in Paris and travelled a good deal. In 1870 he inherited Hertford House in London and a large estate in Co. Antrim, besides a splendid collection of old masters, period furniture and many precious objects of art, for collecting had been the hobby of the 3rd and 4th marquises before him.

Sir Richard was made a baronet in 1871 and he represented Lisburn in the House of Commons before he died in 1890. His wife was a Frenchwoman and when she died seven years later, she bequeathed the whole of the Wallace Collection to the British Nation, in accordance with her husband's wish.

Hertford House, their London home, was bought by Parliament for £80,000 as the most fitting place for the bequest to remain, and the Wallace Museum was opened to the public in 1900; and the collections at that time were valued at £2,000,000. They represent many different phases of artistic achievement.

Another great Ulsterman, the Earl McCartney (1737-1806), born at Lissanoure, Co. Antrim, left a valuble collection of rare MSS. which is now in the British Museum.

Lord Iveagh, too, had accumulated a fine collection of 63 old masters which he bequeathed to the nation and which was a most valuable bequest. The Iveagh pictures were housed before the war in a mansion, Ken Wood, at Hampstead. The house with the surrounding grounds he presented to the people during his lifetime.

This collection, consisting of the works of foreign and British artists, was on loan in the Manchester City Art Gallery in 1928, and previous to this was exhibited at Burlington House. It would be a great opportunity for the Belfast citizens if they could see these famous pictures for a few months in the Belfast Gallery.

The first scientific museum in England was founded in 1683 by one Elias Ashmole, at Oxford, a justly renowned antiquary and virtuoso, who was born at Lichfield in 1617. He was living in London when Charles I raised his standard at Nottingham and the Civil War began. At this, the prudent Mr. Ashmole retired to Brasenose College, Oxford, and there engaged in serious study.

After the death of Charles I, Ashmole returned to London and his house in the Temple became the resort of all the famous scientists of the day. Samuel Pepys records singing with him, and finding him " a very ingenious fellow."

With the Restoration, Ashmole was given a lucrative post under the Crown and became a Fellow of the Royal Society and received a Diploma from Oxford University.

About this time a tragedy occurred which might have quenched the collecting ardour of many men for Ashmole saw a fire destroy his house, a library of 30,000 rare volumes and more than 9,000 ancient coins. John Evelyn speaks of Ashmole's industry; and in 1677 he presented a still vast collection to the University of Oxford.

Sir Christopher Wren built a suitable building, with lecture hall and laboratory, as Evelyn said, " in imitation of the Royal Society." This was the rise of that Museum known to-day as the Ashmolean.

In Ireland, it was the Royal Dublin Society which took the lead in Museum interests, and which first achieved valuable collections, which were opened to the public in 1783. This Society, which was founded in 1731, aroused great interest throughout the country, and the success of its work made it the progenitor of the National Gallery, the National Museum and the Botanic Gardens, all in Dublin.

The beginning of the Museum effort in Belfast was in a small way by those Belfast citizens who established the Belfast Reading Society in 1788. These men had very serious aims and from the first realised that books alone were not enough. They declared their Society anxious to receive donations of books and MSS., specimens of plants, animals and minerals, models of machines and " such objects as will illustrate the antiquity, the national, commercial and ecclesiastical history of this country." Surely an ambitious and comprehensive scheme !

For many years such gifts accumulated, and, with those already possessed, their housing, their use and preservation became a problem, and a few years later, in 1792, this ambitious Society felt justified in changing its name to " The Belfast Society for Promoting Knowledge."

After that, this small but ambitious beginnings of a Museum went on increasing until they necessitated more roomy premises and space was rented in the newly erected White Linen Hall, built in what had been part of the old Castle demesne and what, at that time, was grassy, tree-lined meadows. From that day the Society's imposing appellation was almost forgotten and the Library became known laconically as " The Linenhall Library " and is still full of vigour and efficiency.

This White Linen Hall, whose usefulness had departed with changing customs, was pulled down a century later to make way for the Belfast City Hall, and the Library moved to more spacious quarters across the road.

Long before this happened, indeed about forty years after the original conception, about 1829, the Museum specimens became a heavy liability, taking up too much space and needing too much care, and they were dispersed.

The antiquities were given to the Academical Institution which had opened in 1814, with vague ambitious for a museum for its young students, though they never materialised.

The Natural History specimens were handed over to the Belfast Natural History Society, a small but vigorous and ambitious group. This gift was a decided impetus to the band of young men who had founded the Society a few years before, and ten years after, the building we are in to-night, was opened and the young Society became even more of a force in the town than before. It has played a prominent part in the life of Belfast in its day. Incidentally this is one of the few Georgian buildings of note still surviving in the city.

You may think that these young founders of the Society had a touching faith in the permanency of their building when I say that among the papers deposited under the foundation stone was a document stating in Latin when and by whom the building was erected, with four verses of the Book of Job in 15 different languages, so that after the lapse of ages they might assist doubting philosophers to unravel mysteries of languages no longer known.

Perhaps their motives were coloured by the presence, at that time, in Killyleagh of the Rev. Edward Hincks who had a natural aptitude for deciphering Oriental inscriptions and attained a wide reputation as an eminent Assyriologist. A bust of Edward Hincks is in Cairo Museum, and that this bit of sculpture was ever made is due largely to John Ward, the son of Marcus Ward. John Ward was himself a distinguished Egyptologist and had got together a fine collection of Egyptian scarabs which he described and illustrated in a catalogue.

The excellence of the collections and their arrangement in the Belfast Museum met with much praise when, in 1852, the British Association met for the first time in Belfast. Admiration was freely expressed by what had been achieved by the Society, and for their determination to help their fellow-men.

The following year Prof. Edward Forbes was lecturing in London on " The Educational Uses of Museums." He said: " In the Belfast Museum the eminent naturalists and antiquaries, who have given celebrity to their town, have made its contents, at a glance, explanatory of the geology, botany, zoology and the ancient history of the locality and the neighbouring province." Professor Forbes was regarded as a leading British naturalist, and his opinion spelt encouragement.

As early as 1836 the Belfast Association of Artists held their first public exhibition in the College Square Museum, and a grand evening party heralded the opening.

This Society held another exhibition in the autumn of 1842. Incidentally, it may be mentioned that Thackeray was enjoying a jaunt up and down Ireland then, and happened to visit Belfast's Museum, while the pictures were being received. He says nothing about the local art of the time, but mentions that he recognised some pictures being unpacked which he had previously seen in some London Exhibition.

Thackeray evidently patronised the theatre, probably in Arthur Square, and he wrote that the scenery there " was the only indication of a taste for the fine arts he had found in the country." He probably hurried too much to look about him.

While this Museum was young it had an amazing opportunity.

Education, free to all and sundry as we know it to-day, was then undreamed of. A large section of the population had little enough to fill their scanty leisure. The casual wanderer in the country around might wonder at what they saw, but there was nowhere they could find out the names of plants or the birds that sang, or the curious stones they picked up which fired their rising urge to know. The Museum was of course open to the general public, but only on Easter Mondays was the entrance fee small enough to allow a crowd to enter, and even then the star attraction was the Egyptian mummy, Kabooti, who was an everlasting mystery to most.

Lectures were only given to members, though a ticket was always graciously given to those sufficiently interested to ask for one.

The first half-century of this Society's existence was ideal for the work it could do. The whole country at that time was being opened up by the railway systems then being inaugurated, and an intense zeal for knowledge of geology, botany, antiquities and kindred subjects prevailed through the country, like a clear wind blowing. Science took vast strides as new discoveries were made.

Through the auspices of the Society and its Museum during the following decades some working men of Belfast did brilliant work and achieved a name for their work in scientific circles that was known everywhere. Such achievement could owe its genesis to the chance offered by the Museum.

Then, years later, free education was having an effect, besides so many cheap and interesting books, magazines and papers available to all who cared to read, and all this changed life for any Society's Museum. Early enthusiastic workers had died and gradually those who followed had wider aims and other channels for work, so the Museum exhibits were naturally losing their vitality.

The collections were still valuable but their preservation and care had become a task that had outgrown the resources of the Society. Interest in the work died, and the Museum died with it.

When the Corporation of Belfast began to plan for a more suitable City Museum than the Grainger Annexe and the top-floor of the Central Library, the Natural History Society realised that their collections would be serving a more useful purpose to the community if they could be amalgamated with the Grainger Collection and others. This offer was duly accepted by the Corporation and a Deed of Gift was executed in July, 1910.

A similar Society to this was begun in Armagh city in 1839 and again a Museum was aimed at, and a building originally designed as a school was taken over and adapted for Museum use in 1856, to house the growing possessions of the Armagh Society. But, faced with like difficulties, these collections were later transferred to their local authority, in this case the Armagh County Council. In 1937, the building was opened by Lord Charlemont, then Minister of Education, and, under the successful curatorship of Mr. T. G. F. Paterson, M.A., M.R.I.A., has continued to flourish in usefulness.

Londonderry, too, had a Natural History Society, for it is on record that its Hon. Secretary wrote to our Society in 1840, asking for information as to the arrangement of specimens for its Museum. Little could have been done then, but in 1903 the Museums Journal records that a proposal to establish a Museum in Derry is being prosecuted and already is advanced so far that the Corporation has practically placed a building at the disposal of the promoters.

This is the building in Brooke Park, but beyond this offer the Derry Corporation has not shown much enthusiasm in fostering an educational Museum. Anything that was done was voluntary work, by an enterprising citizen, the late D. C. Campbell. He worked assiduously and alone; and at the time of his death, in 1926, he was working on the geological collection. His work for Natural History, especially Ornithology, is well recorded in the " Irish Naturalist."

Mr. Campbell was a far-sighted man, with visions of a fine future for Londonderry. He wanted to see a Civic Centre consisting of a Museum, Library and a Hall for public meetings. All this was to rise on the site of the old markets, within the old walls.

It was a site quite ideal for the purpose in such a city which has been described as " having history hanging round its neck like a mill-stone." But nobody listened and nothing was done; and this important site is now occupied by a cinema.

Many towns in Northern Ireland have, in the past, got together collections of local interest and origin. Such beginnings existed at Larne, Ballymena, Banbridge, and probably at other towns too, but they seem to have been lost, dispersed, or decayed for want of care and there were some valuable local bygones among them.

Perhaps this lack of interest and belief in Museums in earlier times was due to a want of imagination and to people not realising the value of the visual approach in education. Museums and education had little connection in the mind of the man in the street in earlier times.

In 1851 the great exhibition was held in Hyde Park, embracing many sides of human endeavour and achievement. The idea was initiated and fostered by Albert, the Prince Consort. The building was all of glass, became known as the Crystal Palace, and received world-wide renown. The exhibition proved a wonderful stimulant to British thought, bringing a wholly new outlook on the intellectual development of the country, and from that date onwards Museums began to grow in importance in the public mind. It was, too, the real commencement of the Production Period: its hundredth anniversary will be celebrated in the Festival of Britain when visual aids will play a part.

There have been many exhibitions since, in Britain and other parts of the world. To look no further than last year's purely British exhibition held in Copenhagen, devised to give to the Danes and their neighbours a visual idea of the latest and finest products of British design and industry.

It was a huge success, and though not open long, visitors flocked in their thousands every day and learnt more about British ability in a few hours than any amount of Government pamphlets could teach them in a year. The eye is quicker than the ear in learning: a fact acknowledged to-day by the well-recognised value of the film in educational work.

All this goes to show the necessity of training the faculty of observation, a faculty urged upon the visitor in any Museum which, in its turn, arranges its exhibits to tell their story as plainly as may be. Such an arrangement gives him definite facts in a short time and rewards him only so far as his power of observation and assimilation allows him to reap.

I said the stimulus of the 1851 exhibition brought a wave of enthusiasm over the country and many private society Museums came into existence and a good deal of more or less valuable material, bygones and domestic appliances and some scientific specimens, were accumulated thus. But it is an inescapable fact, that if such material is to be properly conserved, and put to practical use for the public, such a Museum must be supported by public funds, for enthusiasm is not enough. Trained and professional care must be there and that costs money for continued success.

A great believer in Museums was the late Sir Henry Cole, the founder of the Department of Science and Art of the Board of Education in London. When speaking of the purposes of Museums to the people of Birmingham so far back as 1874, he said: "If you wish your schools of science and art to be effective, your health, your food and the air to be wholesome, your life to be long, your manufactures to improve, your trade to increase, and your people to be civilised, you must have Museums of Science and Art to illustrate the principles of life, health, nature, science, art and beauty."

You may think, perhaps, that Sir Henry was unduly ambitious for Museums, but it is true that many countries in Europe and America have spent and are spending large sums of money and energy towards Museums; and many eminent men have devoted their lives to Museum progress, expounding their views in books and papers.

The late Dr. George Brown Goode, a famous American Museum Director and a pioneer of good design in Public Museum Exhibition series, defined the Museum as "an establishment containing a collection of instructive labels, each illustrated by well-selected specimens." This definition gives a line of approach to the question of the educational value of Regional or Branch Museums throughout Northern Ireland.

Museums of to-day should be as alert as any successful business concern in planning new ventures, new lines of thought, new series of exhibits which will attract more visitors and always provoke new angles of approach: a live Museum must be continually on the move.

If you agree with me that Museums serve a useful purpose which is necessary to the community, then I ask you to agree that well-organised Regional Museums in the province, which would all be linked up with the work of the Belfast Museum as a central authority, would be an important factor in any well-considered scheme of education and a good investment of public money.

In these days education has achieved a significance more fitting to our needs, a significance so often denied it in the past, but in considering methods of teaching, the value of visual instruction is a first necessity and there are, in Museums, subjects to illustrate lessons such as no school or institution could provide.

The late Marquis of Londonderry, the first Minister of Education, Northern Ireland, said: "The education of children, of young men and young women was the primary object of the Northern Parliament."

Here, then, is an opportunity for the Government, in the future, to show the importance of visual instruction by establishing well-equipped Regional Museums throughout the province for the full utilisation of the facilities offered by such Museums.

The aim of the parent Museum, supported by an adequate and capable staff, would be to build up and provide a circulation of objects, both natural and created, arranged in an attractive and harmonious manner because so much depends upon their presentation; and displayed in standard-size case-frames, or multiple or sub-multiples, for convenience in packing and exhibiting.

They would be strictly educational in character, dealing with subjects of general interest rather than local interest.

The importance of harmony cannot be over-estimated. The principal shops in Belfast realise its importance by their window-dressing style and by the display inside. The furniture dealer to-day does not show rows of bedsteads and other articles, but arranges them in their proper setting to appeal to the eye.

The public, too, do not realise the work often to be done in a Museum before a specimen is placed on exhibition: a natural history specimen or an archaeological object often requires special treatment, and their success as exhibits often depend upon the skill bestowed upon them in their preparation and preservation.

Carefully arranged exhibits from the Circulatory or Regional Collection would be sent from Belfast for exhibition in a town for, say, three or six months' period, when they would be replaced by another set of exhibits. Those withdrawn would be taken to another destination for display, to be replaced by new exhibits; and in this way there would be a continual movement of material.

The other part of each Regional Museum would be purely local in character, consisting of antiquities, the flora and fauna, the geology, besides arts and crafts peculiar to the district; and this would give each Regional Museum a character of its own, for these purely local items would be permanent.

The building need not be large; and in addition to the educational and local exhibition galleries, a room for loan exhibitions of pictures, arts and crafts, school-art displays, agricultural and horticultural shows and so on, besides a lecture room equipped with a demonstration table, blackboard and lantern for popular lectures, should form part of this important work.

Such a building should be the meeting-place for all local Societies in the neighbourhood, such as the Woman's Institute, Study Circles, Farmers' Clubs, and so on.

It should be a friendly place for all, with something fresh to see, something of interest, which would bring pleasure and profit into many a country home.

American museums look upon lectures to school children as a very necessary part of the activities of a Museum. They keep a specially trained staff, called docents, for this work which is very popular with all State schools within reach.

When one comes to the Art section of a Museum there is quite a different approach in the mind of the visitor to that with which he observes in the other collections.

Rooms devoted to branches of science and kindred subjects aim at the diffusion of knowledge, whereas in the Picture Galleries and other abodes of art, the main thing aimed at is to foster a love of the beautiful.

Pictures can exercise a fine discipline of taste upon those who look upon them and study them. It is indeed the only thing to do with them; and it usually pays, for that is the only way to share in what the painter felt as he worked and learned what he was trying to achieve.

Some of the great pictures of the world have an overwhelming influence, holding our attention and charging our memory. Art is a strange necessity of life, for if we look back as far in time as we may it is always to perceive that all races from China, India, Assyria, Egypt, Greece and Rome and others, even ourselves, all had an art full of might and majesty, which gives us, who come after, a clear conception of their minds and life.

Sympathy and imagination are essential qualities to possess if one is ever to find any art intelligible.

Man has always been either an artist or a believer in art; often he is not highly cultivated, yet enough for the satisfaction of the artistic needs within him; and it is these inherent needs which determine his feeling for art, and which may be educated to higher appreciation.

In the National Galleries one may see the works of the outstanding artists of the past. Few municipalities or County Councils to-day could undertake to acquire, by purchase, anything approaching such munificence. But what provincial towns can do is to show their public the best selection of modern work, to show the trend of thought among artists of the present day, and their reactions to the times we live in. I think that the Belfast Museum is doing that very satisfactorily.

A collection of works, too, by local artists is really very important. What task can be more interesting than to gather together the evidence of the artistic activity of the people of one's own country from the early days onward?

In addition to Pictorial Art, the Industrial Art should not be forgotten.

By Industrial Art is meant factory-made goods or mass-produced articles which conform to aesthetic standards without destroying their functional uses.

In past centuries, when life was lived at a slower and a quieter tempo, all hand-made crafts from spinning wheels to kettles, from the appliances of the farmer to pottery or anything else, fitness of purpose was of prior importance in the mind of the master craftsman who believed, if given that, all other virtues followed naturally.

In our present machine age, which has eclipsed the patient and thoughtful designer of the past, mass manufacture has many sins to its credit. Factories, seemingly, have not all realised that a good design may be as easily mass-produced as a very bad one and, in the long run, as cheaply. Though, too often, it may be argued that the unthinking will buy the bad design without question.

A good designer knows very well that decoration and ornament must come after the object to be decorated has been made to fulfil its function: that is the condition of sound craftsmanship.

I do not think it is a good policy to put on exhibition examples of badly designed goods as a warning of what not to buy. Nothing should be placed before the public but what is praiseworthy.

The tendency is for people to learn to appreciate what a museum approves of, and a warning about undesirable examples may not have the effect intended.

An old writer has said: " If you want to rid a man of bad projects, put good projects before him."

The Metropolitan Museum of New York has an official specialising in linking up industrial aspects and achievements with Museum needs and aims, in order to encourage good forms and designs. Besides all this there is a Department of Education which not only constantly lectures on the principles of good design and how much depends on it but provides exhibitions to be shown in local industrial districts.

The report of the Committee on Industrial Art, appointed by the Government of Northern Ireland, is a very valuable document and should be read diligently by all interested.

Lessons, too, have been given to adult blind visitors in this room. Specially prepared typed labels accompanied the specimens for the use of instructors, and these were also reproduced in Braille for those who wished to use them.

Specimens were also given to the blind to handle which evoked intense interest, sufficient to prove the educational value of such work. With the better facilities offered at Stranmillis, lessons were given to blind children from the Institute on the Lisburn Road with satisfactory results and abundance of pleasure to the children. It is important that actual objects should be handled by the blind and not diminutive copies.

The exhibitory or instructional work of a Museum is only one of its functions. Sir William Flower, when Director of the British Museum of Natural History, claimed that, in addition to instruction, the functions of investigation and research were the second purpose of a Museum.

It should therefore be a storehouse for the safeguarding of specimens for special investigation, and should be readily accessible to students or any enquirer in the same way as books in a reference library.

To many people research means only work on scientific subjects, but the word applies with equal force to Art, or any branch of human knowledge. History has proved that advances in design have normally been made with the products of their day as a foundation by those faced with new needs or fresh difficulties. No invention is an isolated leap.

We may see this fact proved when contemplating one of Belfast's own industries. Spinning may be traced back as one continuous achievement from the beginnings of prehistoric times, with the spindle and whorl, then the distaff and spindle as the precursors of the spinning wheel, from which, in turn, was evolved the spinning machines. The modern spindle of to-day and the spindle employed by prehistoric folk embody the same principle and is the twisting agency in the modern spinning frame.

Even Bronze Age man, using the flat celt as his chief tool, slowly evolved different methods of attachment to the haft in the course of ages, all making for firmer and surer handling. A great advance was made when the first flanges first appeared. These flanges gradually increased in size, and a ridge appeared across the celt, indicating a revolution in the method of hafting.

This change made a stronger and more reliable weapon until finally some enterprising smith made a true socket which was a triumph of utility and effectiveness.

I need not tell you that these changes took an immense time to evolve, so the earliest flat celt is never found along with the socketed type.

An interesting exhibit of bronze celts in the local Museum shows the supposed methods of hafting of the different stages.

There is a third function undertaken by Museums which may be called extra-mural work, done by lectures, demonstrations and film exhibitions. All such work should exemplify or be associated with the exhibits in the galleries. Visitors frequently decide to visit the Museum galleries more often when their interest has been aroused by such means, and there is always the hope that some may be induced to take up some branch of art or science for serious study.

Finally, there is another development of Museum work which has been followed by great and permanent results in Scandinavia and America.

The idea is to preserve many aspects of a nation's past social history. Bygones and other relics of days gone beyond recall are shown, not in Museum cases, but, in their proper settings, in re-erected mills, barns, huts, houses, shops, and in this way perpetuate the country's past way of life.

These exhibits need ample space, as one would expect, for a life-like setting and have come to be called Folk Museums or Folk Parks, and they are immensely interesting and popular.

Northern Ireland should take this up before the bygones and the life of the province in past centuries is swept away beyond recall. Folk Museums for Northern Ireland were suggested at a lecture by the late Dr. R. F. Scharff on "Provincial Museums" under the auspices of this Society in 1912.

I am reminded that at the third meeting in Belfast of the British Association in 1902 that enthusiastic friend of our Museum, the late Robert J. Welch, got together and exhibited at Queen's College actual specimens illustrating the different stages in the evolution of the Irish jaunting car, commencing with the slide car, which was a basket or creel resting on two straight shafts, the hinder ends of which trailed on the ground. The clog-wheeled car was a development which used two solid wooden discs as wheels and supported a wooden body wider than the axle. The spoke-wheel car was introduced next; and as it improved, the sides of the body became turned down for foot-rests; and this was the parent of the side-car which until recently was frequently seen driven in the streets of Belfast.

All these types may still be found somewhere in the province to-day: but once these survivals of the past feel the impact of modern farming methods, they will be ruthlessly swept away, to be no more seen and swiftly forgotten. Dr. Estyn Evan's book, *Irish Heritage*, is full of such examples and it should be remembered that change moves faster in these days than it did even a few decades ago. It is a great pity that Mr. Welch's exhibit was ever dispersed.

Much too has been written from time to time on the necessity for creating Folk Museums, with a view to such an institution being begun in England, whose history would provide rich material. Regent's Park was suggested as a likely site, but nothing has been done on a national scale. Much of the work of London's early craftsmen and the tools and appurtenances used by them, at present distributed throughout the Museums of London, if brought together would form an important nucleus for a Folk Museum.

Unfortunately the National Trust is unable to assist, as its function is to preserve property on its original site and not to move cottages and other buildings to any Folk Park, however worthy the object.

Yet a Folk Park was started in England, quite on a large scale. It was at New Barnet, near London, where a man, interested in history and survivals of social life, though not connected with any Museum, had formed what he called the Abbey Folk Park; and here he displayed very clearly the social life of Britain from prehistoric times down to the present day. He was Father J. S. M. Ward and he and his wife ran the place with excellent results. Here one had an opportunity to envisage the life of the country all down the ages. I saw this place some years ago, and was astonished at what had been accomplished on this site. I understand it is not now functioning.

I believe there is a good collection of suitable bygones given by Dr. John L. Kirk to York and are now housed in what was once a prison in York Castle.

Wales for a long period had been looking forward to the time when it would be able to establish a Folk Museum; and its opportunity came in 1946 when the Earl of Plymouth offered St. Fagans Castle near Cardiff with its grounds and gardens to the National Museum of Wales. Later he transferred eighty acres of St. Fagans Park. Into this part will be re-erected stone by stone old mills, farms, forges, etc., and in them their contents will be displayed to illustrate the life and culture of Wales, while the mansion will be used to give some idea of the kind of life connected with it.(1)

Ulster offers great scope in this direction for the history of Celtic civilisations may be better studied in this island than in any part of Europe where, for the most part, it has been overlaid and smothered by other civilisations such as the Roman Empire and others.

Folk Museums, with this end in view, could contain Farmhouses, dating from the early centuries of the Christian era, with its implements and furnishings.

Also a Chieftain's Hall and what it contained of grandeur in the way of decorated hangings and other textiles, with weapons, pottery and cooking-pots and other things used in work or play, for even a gaming board has been found to show how some of them occupied their idle moments. And a simple type of harp must have its place. Then monkish craftsmen, working on the far-famed MSS., which bring to us a picture of great artistry, for art was a rich part of life in those days and earlier ages.(2)

Londonderry, with its ancient and historic associations, could well create a Folk Museum; and, as part of such a scheme, it might well commence by calling attention to its historic past by means of permanent metal tablets and issuing a small guide to deal with such places more fully. Visitors from all parts would take more interest in the city if such things were done. One would hope to see the Irish Society giving active support for such a scheme.

The authorities of the Victoria and Albert Museum are always willing to advise Museums and are prepared to assist by grants towards the purchase of objects approved by them as worthy of exhibition. Also they help Museums by loans of specimens. In the early days of the Belfast Museum, when it was housed in the Public Library, there were as many as ten exhibition cases from the Victoria and Albert Museum in which they showed applied art objects; and besides these there were many framed exhibits of needlework and embroideries, illuminated MSS. and early British water-colours from time to time.

Indeed, at the present time one of their circulation exhibition collection of English embroideries is being held in the Belfast Museum. I always found the officials of the Victoria and Albert sympathetic and helpful, but I want to emphasise that it is precisely this type of service, on a smaller scale, which the Belfast Museum, in its turn, could render to Regional Museums established throughout Northern Ireland.

Another thing to keep in mind is that by subscribing a small sum annually to the Contemporary Art Society in London, which was founded in 1909, in return this Society is willing to help in building up collections of modern paintings by presenting pictures periodically, and, in addition, it has acquired a large and important collection of modern art which may be lent to provincial towns.

The National Art Collections Fund, founded in 1903, has, as its object, the securing of worth-while works of art with a view to enriching the Museums in any part of the British Empire, and they, too, will consider grants towards the cost of special objects. Besides all this activity, this Fund has an extremely interesting collection of old masters which it sends out on loan.

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(1) Dr. I. C. Peate, M.A., F.S.A., the Keeper in charge, has written an interesting preliminary illustrated handbook on St. Fagans Castle and other exhibits as a general guide to visitors. No doubt it will be followed by other handbooks as the work of arrangement proceeds.

(2) Read "The Scope and Value of an Irish Provincial Museum," an address delivered in the Central Public Library, Belfast, 8th February, 1911, by Alec Wilson.

Coming nearer home, we have the Friends of the National Collections of Ireland which was established in 1924 to obtain pictures and sculptures and objects of historic interest or other importance for public collections in Ireland.

The Thomas Haverty Trust, whose function it is to purchase the work of Irish artists, living in Ireland, for presentation to public institutions anywhere in the island. Northern Ireland has always had a fair share of the purchased works when the allocations take place every few years.

Many towns in England have established local societies known as "The Friends of the Museum," very similar to the Guild of Queen's. Members pay a small subscription and the funds thus accumulated are used to acquire any object of local, historic or artistic interest, purchasing outright, or they may help in the purchase of anything of exceptional local interest.

So you see, with Museums, as with many other things, there are always people to help when the opportunity comes, of helping those who help themselves.

In conclusion, I feel that some of you may think that I have been sermonising too much, but I thank you for the patience you have shown in listening.

Whether you agree or not with all I have said, I think that, should it ever be decided upon to maintain small Regional Museums in Northern Ireland, they will bring their reward; and therefore I ask you to support such a policy as an educational necessity for the community.

These Museums, too, would help to solve the problem of leisure, by diverting such time into beneficial channels, and so enrich the lives of country folk by bringing to them something hitherto unavailable.

25th November, 1948.

ARTHUR DEANE, President, in the Chair.

FILM NIGHT.

Birds of The Village.

Town and Country Planning.

Penicillin.

Conquest of a Germ.

Instruments of the Orchestra.

Myra Hess.

20th January, 1949.

The President in the Chair.

"FUNGI AS PARASITES OF CROP PLANTS."

PROF. A. E. MUSKETT, D.Sc., M.R.I.A.

[No Abstract.]

17th February, 1949.

The President in the Chair.

"SOME RECENT IMPORTANT ADVANCES IN MEDICINE."

M. G. NELSON, M.D., M.R.C.P. (Lond.), M.R.C.P.I., D.T.M. & H.

[No Abstract.]

128th SESSION, 1948-49.

ANNUAL MEETING.

The 128th Annual Meeting of Shareholders and Members was held in the Society's Rooms, Old Museum Buildings, on Friday, the 4th day of November, 1949, at 3.30 p.m., and among those present were Arthur Deane, President (in the Chair), Dr. Allworthy, Messrs. J. Malcolm Capper, F. J. Cole, William Coulter, T. H. Drummond, J. Heslop Harrison, R. S. Lepper, A. G. Pomeroy, Major Rupert Stanley, Captain E. J. L. Turner, W. H. Workman, Lt.-Col. J. R. H. Greeves (Hon. Treasurer), Messrs. W. Erskine Linton (Hon. Librarian) and James R. Young (Hon. Secretary).

Apologies were received from Mr. J. J. Graneek and Professor T. Alan Sinclair.

Notice of Meeting. The notice convening the Meeting was read by the Hon. Secretary and intimated that the Meeting had been advertised in the local papers.

Annual Report. It was reported that the Annual Report and Financial Statement had been circulated to the Shareholders and Members, and it was agreed that these should be taken as read. The Report reads as follows:—

THE ANNUAL REPORT OF THE COUNCIL FOR THE 128th SESSION, 1948-49.

Your Council has pleasure in submitting its Report for the 128th Session of the Belfast Natural History and Philosophical Society for the year ending 31st October, 1949.

Shareholders and Members. The Shareholders and Members at present number 145. The Council hope that every effort will be made by members to induce suitable persons to join the Society.

Obituary. The Society has suffered heavily. The Council records with regret the death of the following members, concerning which references will be published in the Proceedings:—J. W. Gillmour, Sir E. C. Herdman, K.B.E., D.L., The Marquis of Londonderry, K.G., P.C., M.V.O., LL.D., H. C. Love, M.B.E., A. C. Montgomery, Em. Professor W. B. Morton, M.A., D.Sc., M.R.I.A., Sir Frederick Ogilvie, J. Crawford Shaw, F.C.A., and Major Robert Workman.*

Resignations. Four resignations were received with regret:—Thomas Carnwath, M.B., D.Sc., D.S.O., Mrs. Jeanne Cooper-Foster, Basil R. S. Megaw, B.A., A. H. E. Moore, A.L.A.

New Members. Three new members were elected during the Session:—Lt.-Col. J. R. H. Greeves, B.Sc., A.M.I.E.E., Alexander Riddell, R. Leslie Streight.

Lectures. The Presidential Address, three lectures and a Film Night were given during the Session as follows:—

25th November, 1948: " Film Night."

16th December, 1948: " Psychology Past and Present," Rev. Dr. R. W. Wilde, M.A., B.Sc., Ph.D.

20th January, 1949: " Fungi as Parasites of Crop Plants," Professor A. E. Muskett, D.Sc., A.R.C.S., M.R.I.A.

17th February, 1949: " Some recent important advances in Medicine," M. G. Nelson, M.D., M.R.C.P. (Lond.), M.R.C.P.I., D.T.M. & H.

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*Obituaries appear on page 234.

24th March, 1949: The President's Address, " Uses of Museums and Art Galleries," Arthur Deane, F.R.S.E., M.R.I.A.

The Film Night attracted the best audience, the hall being 95 per cent. full. The Council have decided to have three of these nights in the coming Session's Programme. There was the usual attendance at the Lectures, which will be reported in the Proceedings. At the President's Address, " Uses of Museums and Art Galleries," the Chair was taken by the Minister of Education, Northern Ireland.

LIBRARY. The Journals of corresponding Societies are now being sent to the Queen's University of Belfast Library for distribution between this Library and the Museum Library, and in this way are made available for perusal by those interested.

The Students' Library of the Belfast Museum and Art Gallery continues to receive its allocation of Exchanges from the Society which, with the existing stock of books, are a great source of information and are constantly consulted, particularly by students of Queen's University and Stranmillis Training College.

EXCHANGES. The total number of active Exchanges now amounts to 96. Data concerning Cairns was forwarded to Mr. R. S. Newall, Wilts., and a copy of the Society's Centenary Volume was sent to Professor W. A. Osborne, Victoria, Australia, and to Mr. Daniel Merriman, Master of Davenport College, Newhaven, Connecticut.

PREMISES. During the year the premises have been maintained in a suitable and adequate manner.

ACCOMMODATION. Arrangements are contemplated to enable the Society's activities, together with those of the Belfast Naturalists' Field Club and the W.E.A., to be suitably accommodated on the ground floor of the building.

Your Managing Agents' Report is as follows:—

The long term lettings remain as before, namely, The Royal Society of Ulster Architects, The Ulster Academy of Arts, The Workers' Educational Association and The Ulster Hospital Libraries Association.

The occasional nightly lettings during the year, including the lettings to The Belfast Naturalists' Field Club and The Christadelphian Ecclesia, amounted to a total of £194 2s. 2d.

COUNCIL MEETINGS. Ten Council Meetings were held during the Session. Considerable time was spent in making preliminary arrangements for the publication of the Report of the Island MacHugh Excavations undertaken by Mr. Oliver Davies, M.A.

CONSTITUTION. Five members of Council now retire by rotation:—Dr. S. W. Allworthy, M.A., M.D., F.C.S., M.R.I.A., F. J. Cole, Arthur Deane, F.R.S.E., M.R.I.A., Professor T. A. Sinclair, M.A., Professor W. J. Wilson, M.D., D.Sc.

The Meeting will be called upon to fill the vacancies for three years.

HONORARY TREASURER. Reference will be made in the Proceedings to the lamented death of J. Crawford Shaw, F.C.A., on the 29th August last. Lt.-Col. J. R. H. Greeves, B.Sc., A.M.I.E.E., has been appointed to fill the position.

GIFT. Dr. S. W. Allworthy presented to the Society a framed photograph of the late Professor Sir Joseph Larmor, which now adorns the Society's Rooms.

THE QUEEN'S UNIVERSITY OF BELFAST CENTENARY. In the Great Hall of the University, on the afternoon of Tuesday, the 27th of September, 1949, the Society's President took his place with the representatives of many Universities and learned Institutions, and presented to the Vice-Chancellor an address from the Society, a facsimile of which will be reproduced in the Proceedings.

BRITISH ASSOCIATION 111TH ANNUAL MEETING, NEWCASTLE-UPON-TYNE. Dr. J. Heslop Harrison, Ph.D., M.Sc., attended as the Society's Representative and his Report will appear in the Society's Proceedings.*

ARCHAEOLOGICAL SECTION. A Prospectus has been circulated relative to the Island MacHugh Excavations, which Oliver Davies, M.A., has now completed, and it is hoped that arrangements will be made at an early date for the issue of a Report which will be of exceptional interest to Archaeologists. The Publication will be a Supplement to our Proceedings.

REPRESENTATION. The Society's Representatives during the Session on the following Organisations were:—

Ancient Monuments Advisory Council—Professor T. A. Sinclair, M.A.

Libraries, Museum and Art Committee of the Belfast Corporation—Dr. S. W. Allworthy, M.A., M.D., F.C.S., M.R.I.A.

The National Trust—Em. Professor Gregg Wilson, M.A., D.Sc., Ph.D., M.R.I.A.

REPORT OF HONORARY TREASURER. The total receipts for the year amounted to £495 3s. 9d. but the expenditure was £482 9s. 11d., thus creating a surplus of £12 13s. 10d. This increased the funds in Bank from £8 0s. 5d. at the beginning of the year to £20 14s. 3d. at the close.

The main item of expenditure which calls for comment is the cost of printing the Proceedings and Reports of the Society for the 126th Session which, as will be seen from the Accounts, amounted to £105 6s. 0d. and represents a decrease of £19 over the previous year.†

(By order of Council),
JAMES R. YOUNG, Hon. Secretary.

19th October, 1949.

ADOPTION OF REPORT. In moving the adoption of the Annual Report and Financial Statement, the President referred to the loss the Society had sustained by the deaths of many members, including Em. Professor W. B. Morton, for many years a Member of the Council, and J. Crawford Shaw, our Honorary Treasurer; and to the recent appointment of Lt.-Col. J. R. H. Greeves, B.Sc., A.M.I.E.E., as his successor.

Major Workman, while not an active member of the Society, belonged to a family long associated with it, his grandfather, Robert Workman, was even a promoter of the Society's Object and his father, Thomas Workman, was President in 1898-1900.

Attention must be focussed on the fact that the Society could not afford to lower the standard of its Proceedings, which were so widely circulated, there being now ninety-six Exchanges available for perusal between the University and the City Museum, Stranmillis.

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*No Report was received from Dr. Harrison.—Ed.

†A statement of receipts and payments will be found on page 237.

As the Film Night arranged for this Session had been such a success, the Council have arranged for three similar nights in the 129th Session Lecture Programme, which he hoped would be well attended.

The Chairman also referred to the invaluable Archaeological work undertaken by Mr. Oliver Davies, M.A., whilst at Queen's University; and that the result of his work on the Island MacHugh Excavations would shortly, it was hoped, be published.

As your President, I had the honour of representing the Society at the presentation of Addresses at Queen's University Centenary Celebrations on the afternoon of Tuesday, the 27th September, and presented to the Vice-Chancellor the Address from the Society. The President felt proud of the many brilliant men of Queen's College and the University who had been Presidents of the Society. Among these were Professor Thomas Andrews, Doctor Cunningham, Professor Morton, Professor Wyville Thompson, Professor James Thomson, Professor Letts, Professor Symington and Professor Gregg Wilson.

The Honorary Treasurer, speaking on the Financial aspect, explained that the Proceedings were, and would remain, the main item of expenditure.

In conclusion the President thanked the Hon. Secretary, Hon. Treasurer and Hon. Librarian for the assistance he had received from them during the year and for the active interest they took in the Society's work. He had pleasure in proposing the Adoption of the Reports.

Major Rupert Stanley, LL.D., seconded the Adoption of the Annual Report and Financial Statement. He hoped this old Belfast Society would long continue.

The Motion was then put to the Meeting and passed unanimously.

Speaking on the Report, Mr. A. G. Pomeroy regretted the reduction in the membership of the Society, and suggested that every member should endeavour to introduce a friend, and that a number of the Belfast Naturalists' Field Club members might be persuaded to join the Society.

Mr. J. Malcolm Capper expressed regret that the Field Club this year had to obtain accommodation at the Municipal Museum, Stranmillis, for its Lectures. The Hon. Secretary, in reply, stated that this was only for the Field Club's large Meetings, they still had the use of the Society's room for Committees and Sectional Meetings, and that next year it was hoped ample and adequate provision for Lectures would be provided on the ground floor of No. 7 College Square North.

CONSTITUTION. The Chairman called for nominations for five places on the Council. The five retiring members were eligible and offered themselves for re-election.

Captain E. J. L. Turner, M.C., proposed that the five members of Council who retire by rotation—Dr. S. W. Allworthy, F. J. Cole, Arthur Deane, Professor T. A. Sinclair, Professor W. J. Wilson—be re-elected to the Council. Captain Turner went on to say that he thought the work and aims of the Society had recently become somewhat obscured, and it would be a great pity if the past methods of the Society should be in any way retarded, but rather that they be fostered and encouraged.

Mr. William Coulter seconded the Resolution, which was carried unanimously.

The Chairman asked if any member would like to bring forward anything pertaining to an Annual Meeting, and as there was no further business the Chairman declared the Meeting terminated.

Subsequently a Meeting of the Council for the coming Session was held when the Officers were re-elected.

CORRESPONDENCE.

Yale University, Newhaven, Connecticut.
Davenport College,
271 Park Street.
August 26th, 1949.

Daniel Merriman,
Master.

Dear Mr. Deane,

Yours of August 12th with its enclosures has arrived to-day, and although I am sorry that all your efforts have revealed nothing of Sir Wyville Thomson's work while in Ireland, my mind is set at rest, for I know that the ground has been covered so thoroughly by you. I could not have gone ahead with publication without being satisfied on this point. Therefore, while it would have been a happier circumstance if your labours (and those of others whom you set to work) on my behalf had brought something to light, it gives me a feeling of great satisfaction to know that no stone has been left unturned. I repeat, Sir, that I am much in your debt, and more grateful than perhaps you know.

The centenary volume reached me safely, and I shall have reference to it in writing Sir Wyville. It is also useful to me in other respects. My thanks again.

Perhaps, as you say, Dr. Praeger will know of something; Sir Wyville started as a Botanist. I'll look for Dr. Praeger's Book in our Library on Monday—it is good of you to call my attention to it, and I have a secure feeling from this interchange of letters with you that I shall like it.

With kind regards,

Sincerely yours,

Signed Daniel Merriman.

[Mr. Merriman is engaged in writing a history of oceanography and was anxious to obtain information about the life of Sir Wyville Thomson, scientific leader of the Challenger Expedition (1872-1876), during the time he spent in Ireland—Queen's College, Cork, 1853; Queen's College, Belfast, 1854; Royal College of Science, Dublin, 1860. A memoir of Sir Wyville Thomson, by Prof. Gregg Wilson, appears in the Centenary Volume of our Society (1821-1921).—Ed.]

January 31st, 1950.

The Hall,
Kangaroo Ground,
Victoria,
Australia.
September 9th, 1949.

The Hon. Secretary,
Belfast Natural History and Philosophical Society,
Old Museum Buildings,
7 College Sq. N., Belfast.

Dear Mr. Young,

Many thanks indeed for the Centenary Volume which has just arrived in excellent condition. I assure you I appreciate deeply this act of courtesy. As I stated in a former letter this book gives me biographical memoirs and portraits of the men whom I revered when I was a boy. Many a time I would visit the museum when a youngster and dream over the exhibits for it was rather a vogue amongst the boys and youths of Holywood to collect prehistoric weapons, pottery, etc., in place of the usual stamps and birds' eggs. We also discovered for ourselves at least one souterrain. Yes, I remember well the Rt. Hon. Robert Young and your esteemed father Mr. Robert Magill Young. One of your then members took a kindly interest in my collection and study of flints and that was William Gray (I must not forget the M.R.I.A.). A cousin of my mother's Glenny by name, was quite a big collector—I have the auction list of his possessions still—and I think some of his best stuff went into your museum. It was a veritable inspiration to a youngster to see wealthy merchants, doctors, clergymen, and even grocers' salesmen all united in the love of learning and nature.

The following may interest you. One of Australia's most noted medical consultants is Sir Trent Champion de Crespigny. His daughter married a Dr. Hallam L. Movius, who in 1942 brought out a book on The Irish Stone Age. I obtained this volume and was delighted to see so many old friends in stone. I imagine that Dr. Movius found most of his work done by members of your Society.

My very best thanks for the Centenary Volume which has given and will continue to give deep pleasure to me.

Yours very sincerely,

Signed W. A. **Osborne.**

Dear Mr. Young,

In my letter thanking you for the Centenary Volume I am afraid I forgot to mention the receipt of the Proceedings and Reports, Vol. 3, Part 2. This I have read with pleasure and I congratulate the Society in maintaining the high standard set so many years ago.

My best thanks for the Journal.

Yours sincerely,

Signed W. A. **Osborne.**

Dear Mr. Young,

I am in receipt of your letter of 2nd ult. in which you kindly ask me to supply you with some facts about my association with Ulster. I think you will find all the relevant facts in Who's Who and similar publications. I may perhaps add the following. I spent the first 17 years of my life in Holywood, Co. Down, a town at this time of approximately 2,000 inhabitants. The intellectual standard was certainly high but whether higher than in other Ulster centres I do not know. Still the fact remains that the Upper Sullivan School, under the noted educationalist Mr. Adam Speers, in one year came top of all schools throughout Ireland for the number of Exhibitions gained by the pupils. In 1903 the Royal University of Ireland offered three Exhibitions to be gained by competitive examination and all three were won by former Upper Sullivan School pupils.

One very pleasing feature dwells in my memory. In Holywood there was a vogue pursued with great enthusiasm for collecting archaeological material and we youngsters would spend holidays and all possible spare time in searching for flint arrow heads and the like. It was here that I learned a lot from Mr. William Gray, M.R.I.A., who took my juvenile efforts seriously and never condescendingly. It was through this enthusiasm that we would attend the addresses delivered under the auspices of your Society.

A cousin of my mother's, Mr. William Glenny of Glenville, Newry, was a great collector.

Many and many a visit did I pay as a boy to your museum there to gloat over the treasures and let my imagination run wild. At present I am an emeritus-professor living in retirement in a country property and breeding cattle and horses; but I retain interest in affairs of the mind, being president of the Shakespeare Society, the oldest with unbroken continuity of activity in the Empire, vice-president of the Classical Association, of the Forest League and of the Melbourne Branch of the English-Speaking Association. I broadcast once a week and write for the medical and lay press.

I should have stated that I matriculated in the R.U.I. in 1889 and went through the medical course in Queen's College, graduating M.B., etc., in 1895.

Yours sincerely,
Signed W. A. Osborne.

[Miss Mary S. Speers is still living in Holywood and is the daughter of the late Adam Speers who was so well known, in his day, as principal of the Upper Sullivan School there, and referred to by Professor Osborne. Miss Speers tells me that Professor Osborne was the youngest of three sons of the Rev. Henry Osborne, an eloquent preacher, and for 25 years the pastor of the High Street Presbyterian Church. The congregation presented him, on leaving owing to ill health, with a purse of sovereigns and Mrs. Osborne with a tea and coffee set with salver, as a mark of regard. On one occasion when over here, Professor Osborne distributed the prizes at the Upper Sullivan School.—Ed.]

OBITUARIES

PROFESSOR W. B. MORTON, M.A., D.Sc., M.R.I.A.

By the death of Emeritus Professor W. B. Morton on 12th August, 1949, the Society lost one of its most devoted and most valued members.

Professor Morton was born in Belfast in 1868. He was educated at the Royal Academy, at Queen's College, and at Cambridge University, where he was a foundation Scholar of St. John's College. He graduated with first-class honours in Mathematics in the Royal University of Ireland in 1889, and he took a high place in the mathematical tripos of Cambridge in 1892. In that year he also took the degree of M.A. in the Royal University; and this was followed by a Junior Fellowship in 1894. He was F.R.U.I. from 1897 till 1909. He acted as Assistant to his former teacher at Queen's, Professor Everett, and in 1897 succeeded him as Professor of Physics in Queen's College. When the College became Queen's University he carried on in the same office, and he continued in it till his retirement in 1933.

In spite of his heavy teaching duties Professor Morton carried on important researches in the theory of electricity, in acoustics, and in hydrodynamics; and Queen's recognised his work in this sphere, as well as his great success as a teacher, by conferring on him the honorary degree of D.Sc. His colleagues and pupils also showed their admiration for him by presenting him with his portrait, painted by Frank McKelvey, R.H.A., and by endowing a " Morton Prize " in Mathematical Physics in his memory.

Professor Morton was a loyal member of the B.N.H. & P.S. He read numerous papers to the Society, and these were most attractive to the members. His clearness, his sense of humour, and his enthusiasm always delighted his audiences. He was made an Honorary Member of the Society in 1936 and he was President in the years 1923-26.

Gregg Wilson.

APPRECIATION.

It is always a saddening thing to look back down the years which have been rich in friendships and find ourselves the poorer for want of those who have gone beyond recall, those who live for us only in memories.

When Professor Morton was President of the Society for three memorable years, his gift of quiet humour was invariably looked for and enjoyed; it could be like a gilt edge to a dry subject. He had a vivid way of presenting his subject and building up his sentences which were clear, compact and lucid. His lectures were well-designed, symmetrical, in logical sequence, easy to follow, so that one acquired knowledge without effort.

Whatever subject Professor Morton chose to lecture upon, one went to listen, assured of interest and pleasure. But once he confessed, almost shamefacedly, that he was always painfully nervous before lecturing, no matter where or to whom it was given. But if his lecturing was hard to him, it was very easy listening.

The pattern of Professor Morton's life at Queen's had been work and study for long and faithful years and he was supremely happy in it. Childless himself, he watched over the progress of relays of students as a father works with his children and such an attachment was not to be broken lightly.

Professor William Blair Morton, M.A., D.Sc., M.R.I.A.
President 1923-1926.

BRITISH MUSEUM

Professor Morton had a great love for Belfast, the town of his youth and where generations of his forebears had lived in their day. I once complained that my sons were becoming ardent Ulstermen and he squashed my presumption by retorting that only folk whose families had lived in Ulster for two hundred years, at least, as his had, were real Ulster folk.

Professor Morton was ever over-modest about his own achievements and accomplishments but remarkably clear-sighted and precise in his judgments on other folk. He had usually the faculty of seeing the best part of the people he met and being more than a little blind to their shortcomings; but whenever he had been offended, annoyed or hurt by anyone, that one was beyond the pale completely.

He hated cruelty and all such grievous things and once I heard him say that zoos were, to him, like prisons, where innocent creatures of the wild were sentenced for life, and that he could never bear to go near them.

Professor Morton had a quiet, serene manner, and an attractive voice. He had a habit of holding his head high as one who is keenly observant of his world, as it seemed to me, like a sailor scanning far horizons. When after more than fifty years of devotion, Mrs. Morton died after a tragically sudden illness, he was shaken and bewildered and his aloneness made him realise, as never before, the tax of age. The pleasant rhythm of his life was broken sharply and, in his grief, he made it the more complete by giving up his home, giving away his treasured books. It must have been hard indeed for him to build up a new pattern of living but he seemed to crave only quietness and retirement.

His last lecture to the Society was on the life of Sir Joseph Larmor, a friend of his, and on that night his friends realised how frail he was in spite of his gallant bearing: his sparkling vitality was but a shadow of what had been; and though his voice sounded as pleasant as ever and the charm of his words had not lessened, yet his friends murmured together at the saddening change in him and of what it foreboded.

It was sometime later when one Christmas, in response to our customary greetings, he wrote to my husband: " I have lost the opportunities which I once enjoyed of meeting you regularly. I always did enjoy those immensely and they led to ever closer friendship. Now that our lives are altered we can keep our sympathy for each other a continuing happiness . . . . but I have to put up with my 80-ness!"

GRACE DEANE.

J. CRAWFORD SHAW, F.C.A.

When, early in 1946, being the year in which the Society was to celebrate its 125th Anniversary, it behoved the Council to nominate some person of wisdom, loyalty, diligence and circumspection to act as Honorary Treasurer, the President and Honorary Secretary were instructed to approach J. Crawford Shaw, F.C.A. His willingness to act was obtained, and the Council, knowing him to be a man of discretion and faithfulness, appointed him at their Meeting on the 7th day of February, 1946.

During his period of office the financial interests of the Society were looked after in an exemplary fashion. Crawford Shaw, who was at the very top of his profession, had many interests; he led the busiest of lives, starting his day early and ending late, carrying on without worry and with an easy facility.

His character was an inspiring blend of force and gentleness, of practicality and high purpose. He was impressed by the tradition behind the Belfast Natural History and Philosophical Society, deeming it to be an honourable thing.

A regular attender at the Society's Lectures, he made a point of welcoming new Members, many of whom he introduced himself.

The Council will long remember the grace, clarity, and precision with which his statements were always transmitted.

He was appointed Secretary of the Belfast Philharmonic Society in 1937 and continued in office until the date of his death. His services were highly valued by the Society.

His untimely death on the 29th of August, 1949, came as a thunderbolt—his reward is the knowledge of an onerous task accomplished thoroughly, and the respect and thanks of a Society which is not given to throwing bouquets.

JAMES R. YOUNG.

MAJOR ROBERT WORKMAN, J.P.

The unexpected death of Major Robert Workman, J.P., of Craigdarragh, Helen's Bay, Co. Down, which took place on 29th September, 1949, has created much regret amongst a wide circle of friends and admirers. Major Workman was a member of a family long associated with the staple local industries of linen and shipbuilding which did much to advance the business prosperity of Belfast as well as show an example of cultural citizenship. His grandfather, the late Mr. Robert Workman, of Ceara, Malone Road, Belfast, was mainly responsible for the first meeting of the British Association in Belfast in 1852, a meeting which was held in his warehouse in Bedford Street; while his father, the late Mr. Thomas Workman, of Craigdarragh, was a naturalist of distinction whose publications and collections are still consulted, and was President of our Society 1898-1900.* Both of these gentleman were much respected members and shareholders of the Belfast Natural History and Philosophical Society who took an active interest in the Society's work. Major Workman gave much indication of administrative ability in the capacity of Chairman of the Down County Council, while as Chairman of the County Educational Committee during the most important period in its history he did much towards improving the whole standard of education in his native county. He represented the county on the Senate of Queen's University, Belfast. As President of the very old and popular Belfast institution, the Linen Hall Library, he found relaxation and pleasure in the responsibilities which this position entailed. Those who served with him on the Board of Governors of the Library recognised him as no mean authority on English, French and German literature. As a keen, efficient, skilful yachtsman and Commodore of the Royal North of Ireland Yacht Club, he was well known in home waters as well as on the west coast of Scotland. His advice on yachting was constantly sought and willingly given. In the first world war, in which he was wounded, he served with distinction, being commissioned to the 13th Royal Irish Rifles. He will, however, be best and longest remembered for his modesty, kindliness and upright character.

FRANCIS J. COLE.

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*Died during his Presidency at St. Paul, Minnesota, 11th May, 1900. Ed.

J. Crawford Shaw, F.C.A.
Hon. Treasurer 1946-1949.

THE ACCOUNT OF BELFAST NATURAL HISTORY AND PHILOSOPHICAL SOCIETY

For the Year ended 31st October, 1949.

RECEIPTS.

To Balance as per last Account	£8 0 5
,, Donations, Bequests, etc.	—
,, Subscriptions	57 18 9
,, Dividends	18 6 0
,, Rents	409 11 0
,, Rebate of Income Tax	8 2 0
,, Fees	—
,, Realised by Sales	—
,, Miscellaneous Receipts, viz.:—	
Sale of Periodicals	1 6 0
,, Balance against Account on 31st October, 1949	—
	£503 4 2

4½% York Street Debenture Stock	£400 0 0
3½% War Stock	239 19 0

PAYMENTS.

By Maintenance of Premises, etc.		£25 11 8
,, Rent, Rates and Taxes		26 14 8
,, Insurance		30 19 6
,, Salaries and Wages		100 18 6
,, Lectures, including Advertising		37 0 2
,, Printing Proceedings		103 4 8
,, Fuel and Light		78 10 6
,, Other Payments, viz.:—		
Stationery	£22 7 2	
Postages	15 1 1	
Telephone	10 4 9	
Commission on Rents	15 6 11	
Bank Charges	1 1 0	
Audit Fee	1 1 0	
Cleaning Materials	3 18 4	
Inscribing Address for Queen's University Centenary	10 10 0	
		79 10 3
,, Balance in favour of Account on 31st October, 1949		20 14 3
		£503 4 2

Balance, per Bank Book	£20 14 3
Balance in Accountant Officer's hands	—
Net Balance	£20 14 3

We certify that the above is a true Account.
(Signed) ARTHUR DEANE. Governor.
J. R. H. GREEVES, Accounting Officer.
4th day of November, 1949.

I certify that the foregoing Account is correct.
(Signed) G. A. C. PARR,
Comptroller and Auditor-General.
9th day of November, 1949.

IN ACCOUNT WITH ARCHAEOLOGICAL SECTION, 1948-49.

To Balance 31st October, 1948	£8 15 2	By Charge for Rent, Salaries and Overhead Expenses	£12 0 0
,, Subscriptions: 1948-49	9 15 0	,, Balance due to Archaeological Section at 31st October, 1949	11 7 8
,, Subsidy: 1948-49	4 17 6		
	£23 7 8		£23 7 8

Certified correct.

J. R. H. GREEVES,
Hon. Treasurer.

4th November, 1949.

Major Robert Workman,
Shareholder.

Reproduced from the Report of the Governors of The Linen Hall Library for the year 1949.

EXCHANGES.

*Publications received during year.

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*Abo—Publications of the Abo Academy.
*Albany—Bulletins of the New York State Museum.
*Ann Arbor—Publications of the University of Michigan.
Athens—Publications of the Zoological Institute and Museum, University of Athens.
*Auckland—Reports of the Auckland Institute and Museum.
*Basel—Verhandlungen der Naturforchenden Gessellschaft in Basel.
*Bergen—Publications of the Bergen Museum.
*Berkeley, Cal.—Publications of the University of California.
Berlin—Publications of the Zoological Museum of Berlin University.
*Birmingham—Publications of the Birmingham Natural History and Philosophical Society.
*Bloemfontein—Publications of the National Museum of South Africa.
Bologna—R. Accademia delle Scienze di Bologna.
Boston—Publications of the Boston Society of Natural History.
*Boulder—Publications of the University of Colorado.
Brighton—Report of the Brighton and Hove Natural History and Philosophical Society.
*Brisbane—Memoirs of the Queensland Museum.
*Brussels—Annals Société Royale Zoologique de Belgique.
* ,, Bulletin Société Royale de Botanique de Belgique.
*Buenos Aires—Anales del Museo Argentino de Ciencias Naturales.
* ,, Museo Nacional de Historia Natural.
*Buffalo—Bulletins of the Buffalo Society of Natural Sciences.
Calcutta—Publications of the Geological Survey of India.
*Cambridge, Mass.—Publications of the Museum of Comparative Zoology.
*Cardiff—Transactions of the Cardiff Naturalists' Society.
*Chicago—Publications of the Chicago Academy of Sciences.
* ,, Publications of the Field Museum of Natural History.
*Cincinnati—Publications of the Lloyd Library and Museum.
*Coimbra—Publications of the Zoological Museum of the University of Coimbra.
* ,, Publications of the Sociedade Broteriana.
*Colorado Springs—Publications of the Colorado College.
Columbia—Proceedings of the Missouri Academy of Science.
*Columbus—Ohio Journal of Science.
* ,, Bulletin of the Ohio Biological Society.
*Coventry—Proceedings of the Coventry Natural History and Scientific Society.
*Dublin—Proceedings of the Royal Dublin Society.
* ,, "Irish Historical Studies."
,, Bulletin of Geographical Society of Ireland.
Eastbourne—Publications of Eastbourne Natural History, Photographic and Literary Society.

*Edinburgh—Proceedings of the Royal Physical Society.
* ,, Proceedings of the Royal Society of Edinburgh.
* ,, Transactions and Proceedings of the Botanical Society of Edinburgh.
* ,, Proceedings of the Society of Antiquaries of Scotland.

Exeter—Proceedings of the Devon Archaeological Exploration Society.
*Genoa—Atti of the Accademia Ligure di Scienze e Lettere.
*Glasgow—Transactions of the Geological Society of Glasgow.
Gorlitz—Publications of the Natural History Society of Gorlitz.
*Goteborg—Handlungar Kungl. Vetenskaps—och Vitterhets—Samhälle
*Halifax, N.S.—Proceedings of the Nova Scotian Institute of Science.
Hove—Annual Report of the Brighton and Hove Natural History and Philosophical Society.
*Hull—Institute of Education. Studies in Education.
*Indianapolis—Proceedings of the Indiana Academy of Science.
Ithaca—Bulletins of the Cornell University Experiment Station.
La Plata—" Manuferos Fossiles de la Republica Argentina."
,, Correspondencia Cientifica de Florentino Ameghino.
*Lausanne—Memoirs and Bulletins de la Société Vaudoise des Sciences Naturalles.
*Lawrence—Bulletins of the University of Kansas.
*Lima—Memorias Sociedad de Ingenieros del Peru.
*Liverpool—Proceedings of the Liverpool Biological Society.
*Lodz—Acta Praehistorica Universitatis Lodziensis.
*London—Publications of the British Museum (N.H.).
* ,, Quarterly Journal of the Royal Microscopical Society.
* ,, Publications of the British Association for the Advancement of Science.
* ,, Proceedings of the Royal Institution of Great Britain.
* ,, Quarterly Journal of the Geological Society.
,, Publications of the Viking Society for Northern Research.
,, Reports of the National Trust.
* ,, Proceedings of the Essex Field Club.
*Los Angeles—Publications of the University of California in Los Angeles.
*Lublin—Annales Universitatis Mariae Curie—Sklodowska.
Lund—Proceedings of the Royal Physiographic Society at Lund.
*Madison—Transactions of the Wisconsin Academy of Sciences, Arts and Letters.
*Madrid—Publications of the International Exchange Service.
Madras—Publications of the Government Museum, Madras.
,, Publications of the Madras Fisheries Department.
Malvern—Annual Report of Malvern Field Club.
Manchester—Journal of the Manchester Geographical Society.
*Melbourne—Proceedings of the Royal Society of Victoria.
Mexico—Publications of the Observatorio Astronomico Nacional de Tacubaya.
*Montevideo—Archivos Sociedad de Biologia de Montevideo.
*Morgantown—Proceedings of the West Virginia Academy of Science.
*New Brunswick—Rutgers University. United States Quarterly.
*Newcastle-upon-Tyne—Proceedings of the University of Durham Philosophical Society.
*New Haven—Transactions of the Connecticut Academy of Arts and Sciences.
*New York—Annals and Transactions of the New York Academy of Sciences.
* ,, Bulletins of the New York State Museum.
* ,, Milbank Memorial Fund Quarterly.
* ,, Publications of the American Museum of Natural History.
Oslo—Publications of the University Library, Oslo.
,, Publications of the Academie Norvégienn des Sciences de des Lettres.
*Ottawa—Publications of the Geological Survey of Canada, Department of Mines.
* ,, Publications of the Canadian Department of Agriculture.
Oxford—Proceedings and Report of the Ashmolean Natural History Society.
Padova—Atti dell Accedemia Scientifica.

*PHILDELPHIA—Proceedings of the Academy of Natural Sciences of Philadelphia.
,, Proceedings of the American Philosophical Society.
*POLSKA—Annales Panstwowe Museum Zoologiczne.
*PULLMAN—Research Studies of the State College of Washington.
*RENNES—Bulletin Geologique et Mineraligique de Bretagne.
* ,, Bulletin of the Société Scientifique de Bretagne.
RIGA—Publications of the Latvijas Universitates, Riga.
,, Professor Strand, F.L.S.—Folia Zoologica et Hydrobiologica.
RIO DE JANEIRO—Archivos do Instituto de Biologia Vegetal.
* ,, Archivos Jardim Botanico do Rio de Janeiro.
,, Archivos Escola Superior de Agriculture e Medicina Veterinaria.
* ,, Publications of the National Museum of Brazil.
* ,, Publications of the Oswaldo Cruz Institute.
*ROCHESTER, N.Y.—Proceedings of the Rochester Academy of Science.
*SAN DIEGO—Transactions of the San Diego Society of Natural History.
*SAN FRANCISCO—Proceedings of the California Academy of Sciences.
*SOFIA—Comptes Rendus of the Bulgarian Academy of Sciences.
STILLWATER—Bulletins of the Oklahoma Agricultural and Mechanical College.
STIRLING—Transactions of the Stirling Natural History and Archaeological Society.
*ST. LEONARDS-ON-SEA—Report of the Hastings and St. Leonards Natural History Society.
* ,, Hastings and East Essex Naturalist.
ST. LOUIS—Annual Report of the St. Louis Public Library.
STOCKHOLM—Matematisk Naturvetenskaplega Bibioteket.
* ,, Reports of the Swedish State Institute of Freshwater Fishery Research.
*STRATFORD—The Essex Naturalist.
*STAVANGER—Publications of the Stavanger Museum.
SWANSEA—Report of the Swansea Scientific and Field Naturalists' Society.
SYDNEY—Annual Report of the Technological Museum, Sydney.
*TORONTO—Transactions and Proceedings of the Royal Canadian Institute.
*TORQUAY—Transactions and Proceedings of the Torquay Natural History Society.
*UPSALA—Bulletin of the Geological Institution of the University of Upsala.
*VIENNA—Verhandlungen Zoologisch-Botanischen Gesellschaft.
*WARSAW—Publications of the Musée Zoologique Polonais.
*WASHINGTON—Annual Report of the Smithsonian Institution.
* ,, Proceedings of the United States National Museum.
* ,, Smithsonian Institution, Miscellaneous Collections.
* ,, Publications of the United States Geological Survey.
* ,, Publications of the United States Department of Agriculture.
* ,, Bulletin of the Bureau of American Ethnology.
,, Contributed Technical Papers of the National Geographical Society.
WELSHPOOL—Publications of the Powys Land Club.
YORK—Annual Report of the Yorkshire Philosophical Society.
*ZURICH—Publications of the Natural History Society of Zurich.

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129th Session.

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PRESENTED
28 MAR 1951

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*I Bequeath out of such part of my personal Estate, as may by Law be bequeathed for such purposes to the Council of the Belfast Natural History and Philosophical Society, the sum of**

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